CP100-NRM

System Board
User's Manual

A12870240

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ One system board
- ☑ One IDE cable
- ☑ Two USB cables
- ☑ Two Serial ATA data cables
- ☑ Two Serial ATA power cables
- ☑ One bracket mounted with a COM port
- ☑ One I/O shield
- ☑ One CD
- ☑ One QR (Quick Reference)

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Specifications

Processor	• Socket G rPGA 988A for: - Intel® Core™ i7-620M (SV) - Intel® Core™ i5-520M (SV) - Intel® Celeron® P4500 (SV) • Supports IMVP6.5 up to 35W CPU
Chipset	• Intel® QM57 PCH (Platform Controller Hub)
System Memory	• Two 204-pin SODIMM sockets • Supports DDR3 800/1066MHz (PC3-6400/PC3-8500) • Supports dual channel memory interface • Supports up to 8GB system memory • DRAM device technologies: 1Gb and 2Gb DDR3 DRAM technologies are supported for x8 and x16 devices, unbuffered, non-ECC
Expansion Slots	• 1 PCI Express x1 slot • 1 PCI slot
Graphics	• Intel® HD Graphics • Display ports: DVI-I (Chrontel CH7318), LVDS and VGA • VGA display resolution up to QXGA 2048x1536 • LVDS: Single Channel - 18/24-bit; Dual Channel: 36/48-bit • Intel® Clear Video technology • Intel® Dynamic Video Memory Technology (Intel® DVMT) • Intel® Smart 2D Display Technology (Intel® S2DDT)
Audio	• Realtek ALC262 2-channel High Definition Audio • High performance DACs with 100dB SNR • ADCs with 90dB SNR • Two stereo DACs support 24-bit PCM format for stereo audio playback • Three stereo ADCs support 20-bit PCM format for multiple input streaming • S/PDIF audio interface
LAN	• Intel 82577LM with iAMT6.0 Gigabit Ethernet Phy • Realtek RTL8111C PCI Express Gigabit Ethernet controller • Integrated 10/100/1000 transceiver • Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab • Supports wire management
Serial ATA	• 4 Serial ATA ports compliant with SATA 1.0a specification • SATA speed up to 3Gb/s (SATA 2.0) • Integrated Advanced Host Controller Interface (AHCI) controller • Supports RAID 0/1/5/10
IDE	• JMicron JMB368 PCI Express to PATA host controller • DMA mode: Ultra ATA up to 100MB/s • PIO mode: up to 16MB/s
AMT	• Supports iAMT6.0 • Out-of-band system access • Remote troubleshooting and recovery

	• Hardware-based agent presence checking • Proactive alerting • Remote hardware and software asset tracking
TPM (optional)	• Provides a Trusted PC for secure transactions • Provides software license protection, enforcement and password protection
Rear Panel I/O Ports	• 1 mini-DIN-6 PS/2 mouse port • 1 mini-DIN-6 PS/2 keyboard port • 2 DB-9 RS232 serial ports - Pins 1 and 9 of COM 2 functions as RS232 signal or power (selectable via jumper) • 1 DB-15 VGA port • 1 DVI-I port (DVI-D signal only) • 2 RJ45 LAN ports • 4 USB 2.0/1.1 ports • Mic-in, line-in and line out jacks
I/O Connector	• 2 connectors for 4 external USB 2.0/1.1 ports • 2 connectors for 2 external serial ports - COM 3 supports RS232/485 • 1 LVDS LCD panel connector • 1 LCD/inverter power connector • 1 8-bit Digital I/O connector • 1 front audio connector for line-out and mic-in jacks • 1 CD-in connector • 1 S/PDIF connector • 1 4 Serial ATA connectors • 1 44-pin IDE connector • 1 24-pin ATX power connector • 1 front panel connector and 2 fan connectors
BIOS	• AMI BIOS • 64Mbit SPI BIOS
Energy Efficient Design	• ACPI v2.0 specification • System Power Management • Wake-On-Events include: - Wake-On-PS/2 KB/Mouse - Wake-On-USB KB/Mouse - Wake-On-LAN - Wake-On-Ring - RTC timer to power-on the system • CPU stopped clock control • AC power failure recovery
Damage Free Intelligence	• Monitors CPU/system temperature and overheat alarm • Monitors Vcore/5V/1.05V/1.5V/12V/3.3V/3.3VSB/VBAT voltages and failure alarm • Monitors CPU/chassis/1st fan speed and failure alarm • Read back capability that displays temperature, voltage and fan speed • Watchdog timer function
Temperature	• 0ºC to 60ºC
Humidity	• 10% to 90%
PCB	• Mini-ITX form factor • 170mm (6.7”) x 170mm (6.7”)

Features

Watchdog Timer

The Watchdog Timer function allows your application to regularly "clear" the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

DDR3

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 21 Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

Graphics

The integrated Intel Gen5.75 graphics engine delivers an excellent blend of graphics performance and features to meet business needs. With support for Intel Clear Video technology, Intel DVMT and Intel S2DDT, Intel Gen5.75 provides excellent video and 3D graphics with outstanding graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications.

DVI

DVI (Digital Visual Interface) is a form of video interface technology made to maximize the quality of flat panel LCD monitors and modern video graphics cards. Data is transmitted using the TMDS (Transition Minimized Differential Signaling) protocol, providing a digital signal from the PC's graphics subsystem to the display.

LVDS

The Low-Voltage Differential Signaling (LVDS) interface allows the Intel Graphics Media Adapter to communicate directly to the flat-panel display. The LVDS interface supports pixel color depths of 18 and 24 bits.

PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x1 PCI Express lane supports transfer rate of 2.5 Gigabytes (250MBbps) per second which is nearly 4 times faster than the traditional PCI.

Intel Active Management Technology (AMT)

Intel Active Management Technology (Intel® AMT) allows remote access and management of networked systems even while PCs are powered off, remotely repair systems after OS failures and has the capability to remotely update all systems with the latest security software.

S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The system board supports RAID 0, RAID 1, RAID 5 and RAID 10.

Gigabit LAN

The Intel 82577LM Gigabit LAN Phy supports iAMT6.0 while the Realtek RTL8111C PCI Express Gigabit controller supports up to 1Gbps data transmission.

USB

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Wake-On-Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

Wake-On-PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

Wake-On-USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

RTC Timer

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

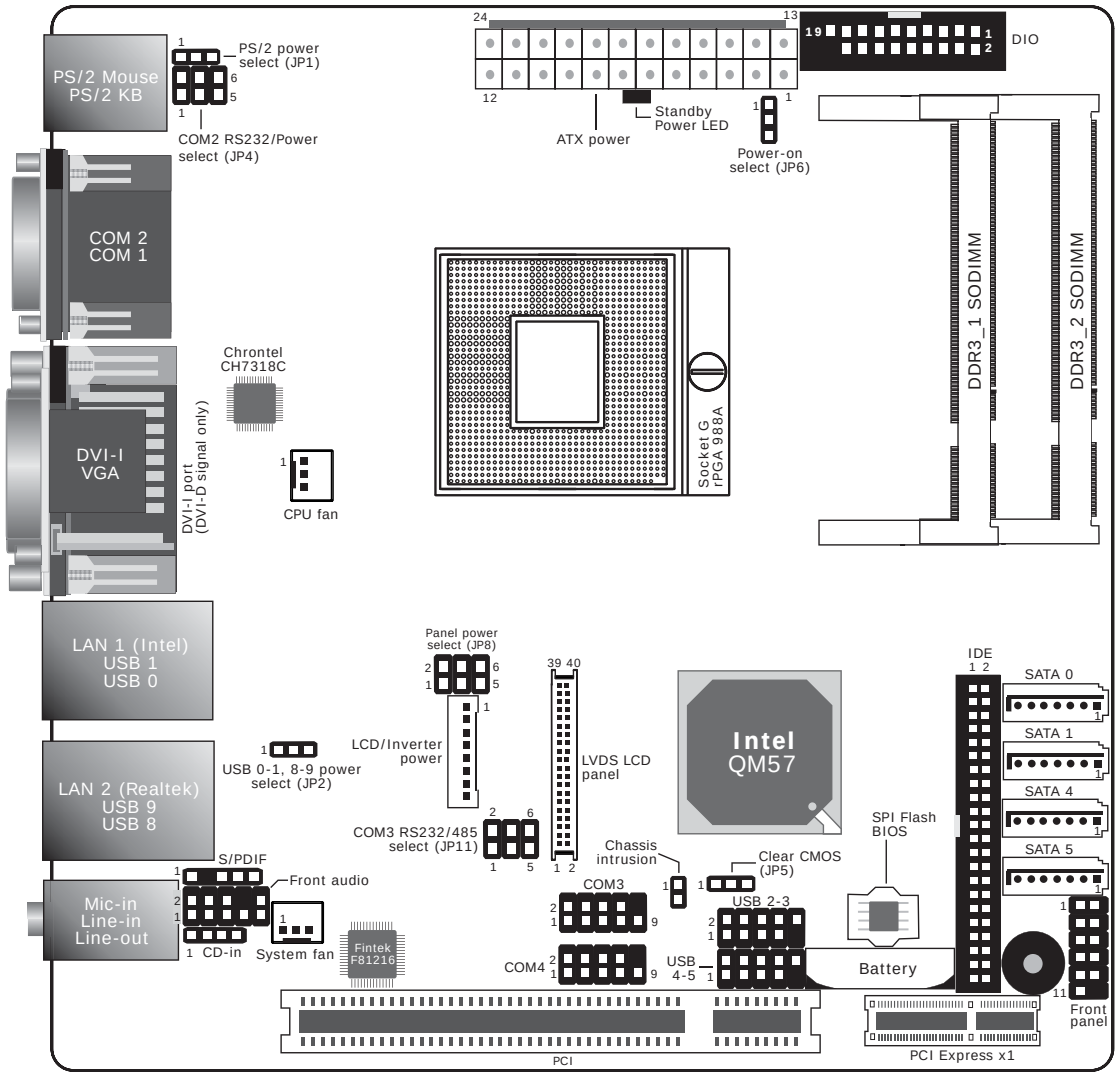
Important:
The 5V_standby power source of your power supply must support ≥720mA.

Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

Chapter 2 - Hardware Installation

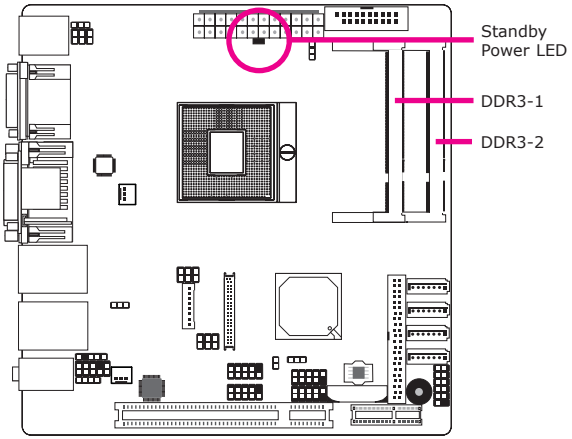
System Board Layout



Important:
Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

System Memory

Important:
When the Standby Power LED lit red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

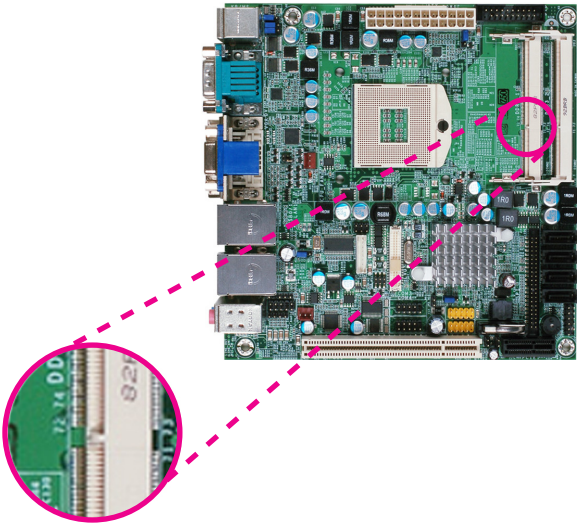


The system board is equipped with two 204-pin SODIMM sockets that support DDR3 memory modules.

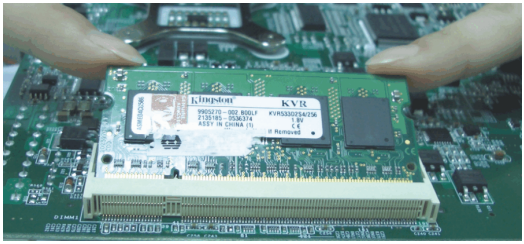
Installing the DIM Module

Note:
The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

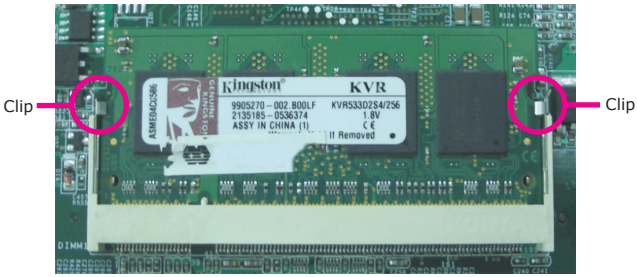
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the SODIMM socket on the system board.
4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.



5. Grasping the module by its edges, align the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.



6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.



CPU

Overview

The system board is equipped with a surface mount rPGA 988A CPU socket.

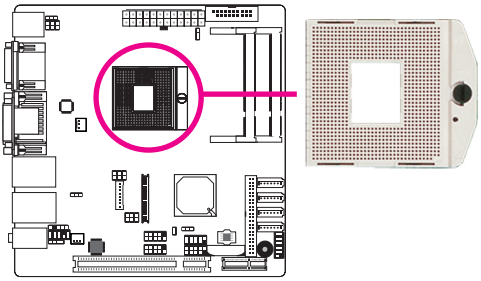
Note:
The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

Installing the CPU

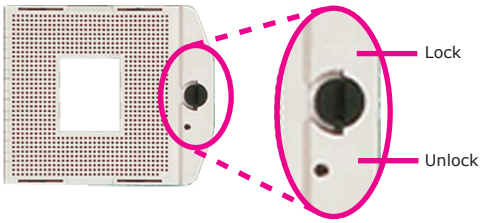
1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

3. Locate the rPGA 988A socket on the system board.



4. Make sure the screw is in its unlock position. If it's not, use a screwdriver to turn the screw to its unlock position.



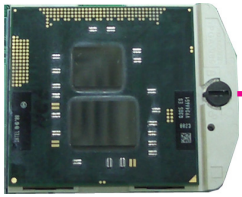
5. Position the CPU above the socket. The gold triangular mark on the CPU must align with pin 1 of the CPU socket.

Pin 1

Gold triangular mark

Important:
Handle the CPU by its edges and avoid touching the pins.

6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force. Use a screwdriver to turn the screw to its lock position.



Screw in locked position

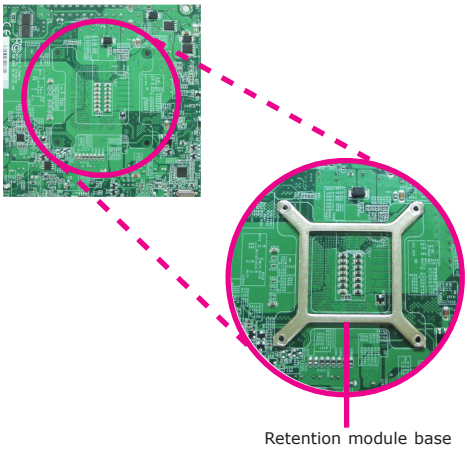
Important:
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

Note:
- Use only certified fan and heat sink.
- Your fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.

1. On the solder side of the board, match the retention module base to the mounting holes around the CPU socket.



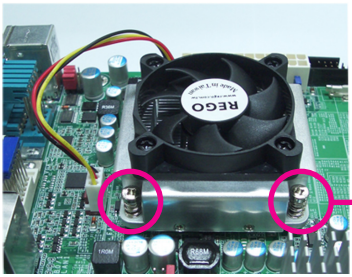
2. Turn to the component side of the board making sure the retention module base is positioned and fitted properly under the board.

3. Apply a thin layer of thermal paste on top of the CPU. Do not spread the paste all over the surface. When you later place the heat sink on top, the compound will disperse evenly.

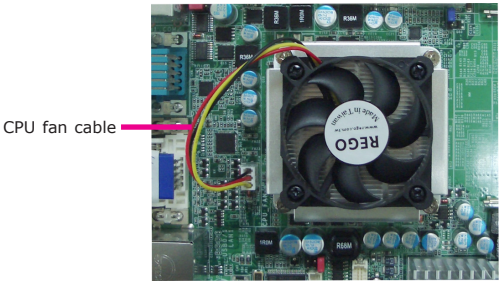
4. Place the fan / heat sink assembly on top of the CPU. The 4 screws around the heat sink must match the screw holes of the retention module base. We strongly recommend using this type of fan / heat sink assembly because it provides adequate cooling to the components of the system board.

   Turn each Phillips head screw half way down first to initially stabilize the heat sink onto the board, then finally tighten each screw.

   Important:
   Do not turn the first screw all the way down followed by the next and so on. This is to avoid imbalance which might cause cracks or fractures to the CPU and/or heat sink assembly.

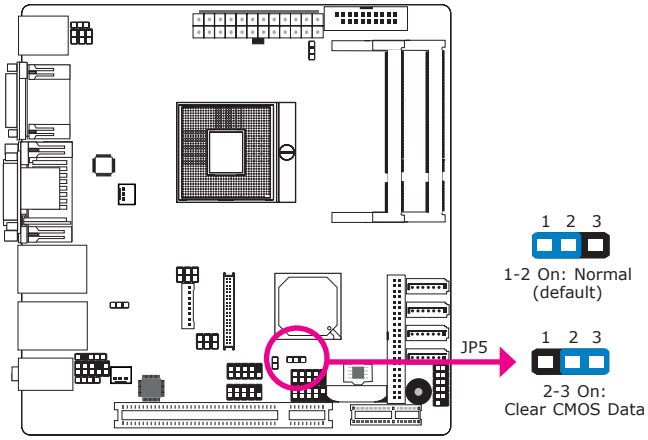


5. Connect the CPU fan's cable connector to the CPU fan connector on the system board.



Jumper Settings

Clear CMOS Data



If you encounter the following,

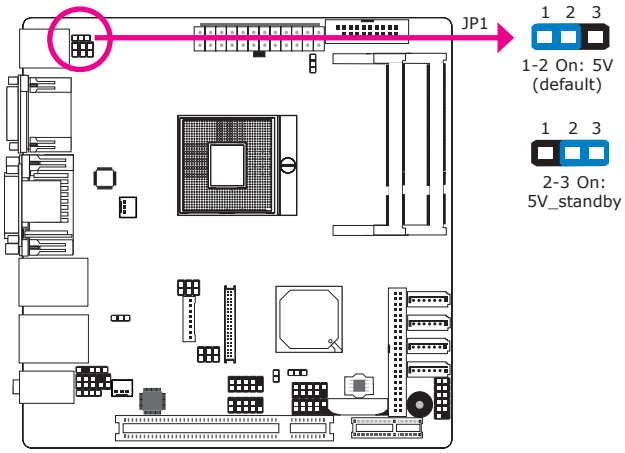
a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Set JP5 pins 2 and 3 to On. Wait for a few seconds and set JP5 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

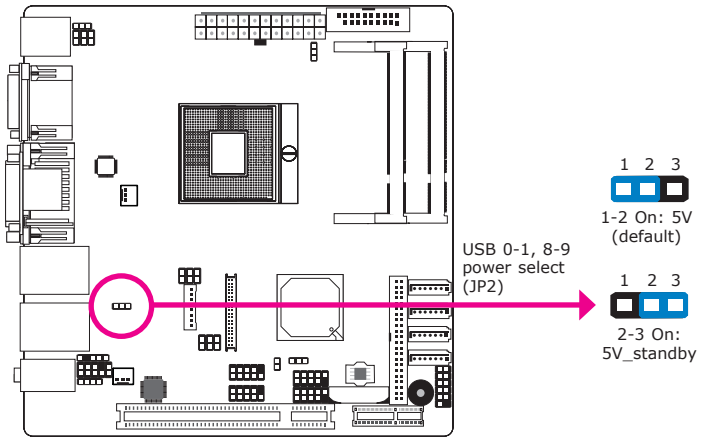
PS/2 Power Select



JP1 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

Important:
The 5VSB power source of your power supply must support ≥720mA.

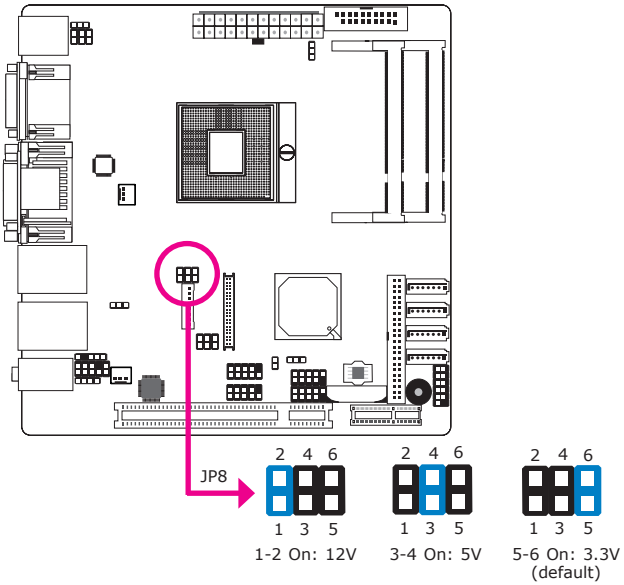
USB Power Select



JP2 (for USB 0-1 and USB 8-9) is used to select the power of the USB ports. Selecting 5V_standby will allow you to use a USB device to wake up the system.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

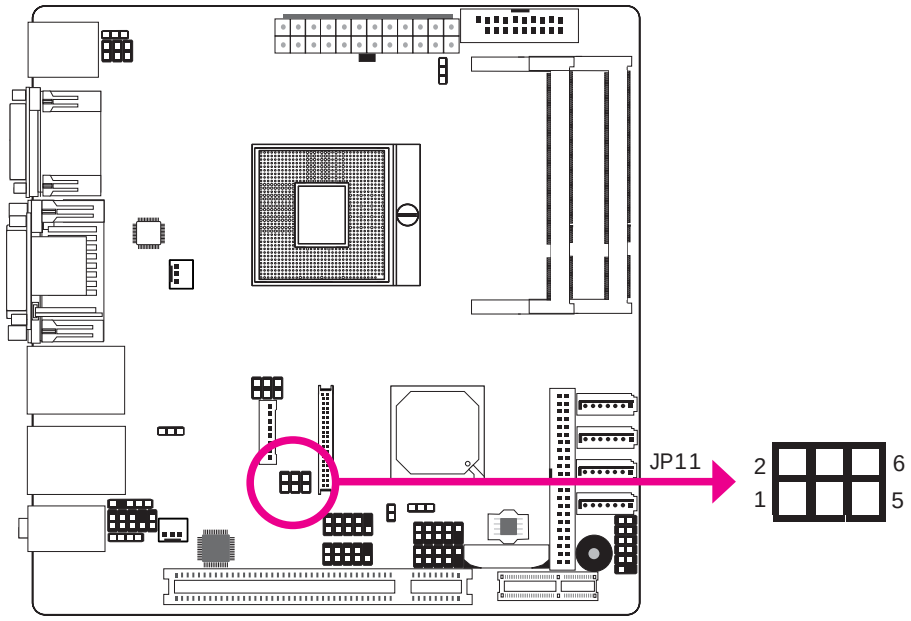
Panel Power Select



JP8 is used to select the power supplied to the LCD panel.

Important:
Before powering-on the system, make sure JP8's setting matches the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

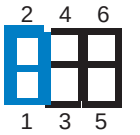
COM 3 RS232/RS485 Select



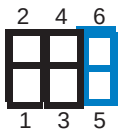
JP11 is used to configure COM 3 to RS232 or RS485.

The pin function of COM 3 will vary according to the jumper's setting.

JP11

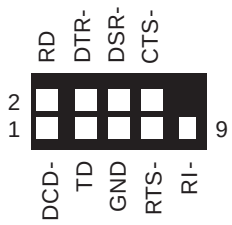


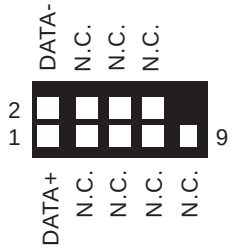
1-2 On: RS232
(default)



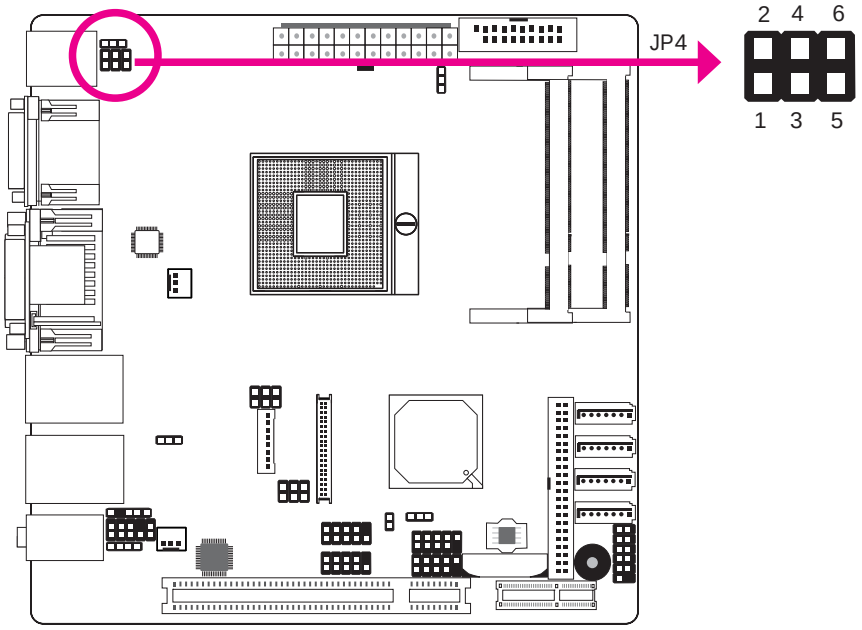
5-6 On: RS485

COM 3



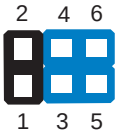


COM 2 RS232/Power Select



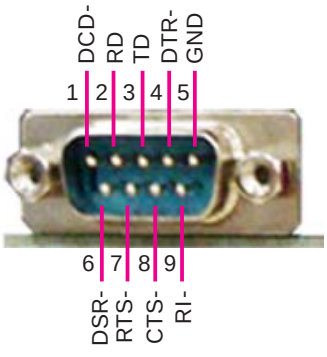
JP4

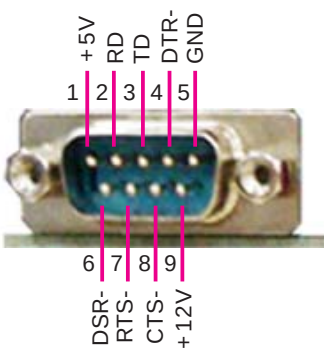
1-3, 2-4 On:
RS232 standard
(default)



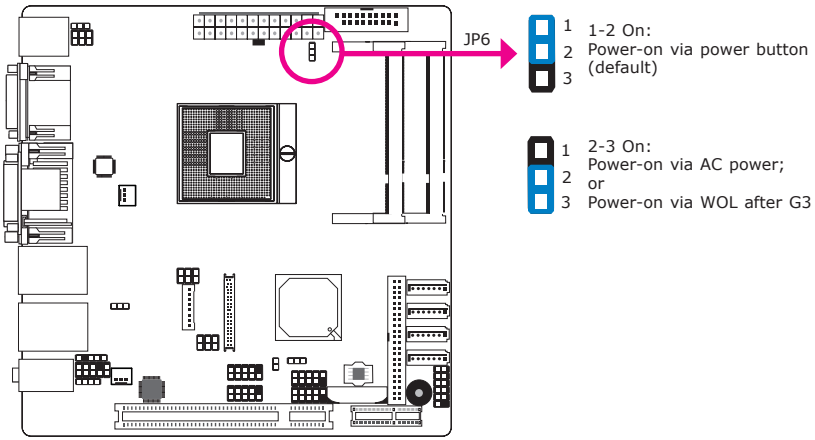
3-5 (5V), 4-6 (12V) On:
RS232 with power

COM 2





Power-on Select



To power-on via WOL after G3:

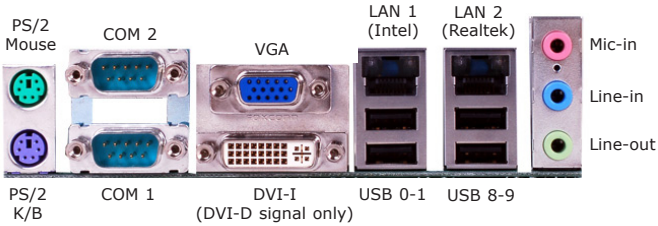
1. Set JP6 pins 2 and 3 to On.
2. Set the "After G3" field to **Power Off/WOL**.
3. Set the "Wake On LAN From S5" to **Enabled**.

The BIOS fields are in the "South Bridge" submenu (Chipset menu) of the AMI BIOS utility.

To power-on via AC Power:

1. Set JP6 pins 2 and 3 to On.
2. Set the "After G3" field to **Power On**.

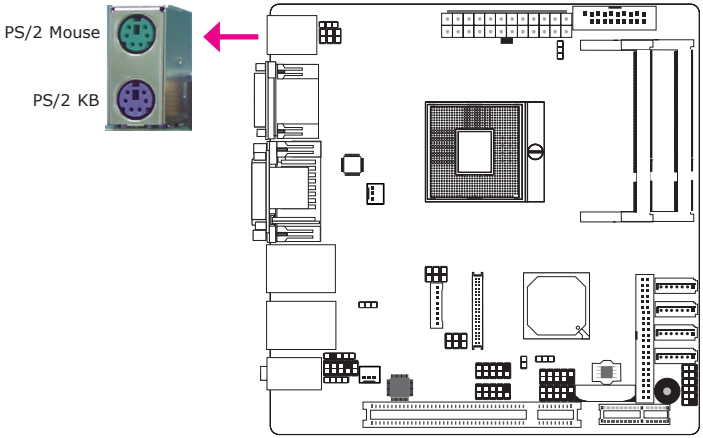
Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- 2 COM ports
- VGA port
- DVI-I port (DVI-D signal only)
- 1 Intel LAN port
- 1 Realtek LAN port
- 4 USB ports
- Mic-in jack
- Line-in jack
- Line-out jack

PS/2 Mouse and PS/2 Keyboard Ports



These ports are used to connect a PS/2 mouse and a PS/2 keyboard. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

Important:
Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.

Wake-On-PS/2 Keyboard/Mouse

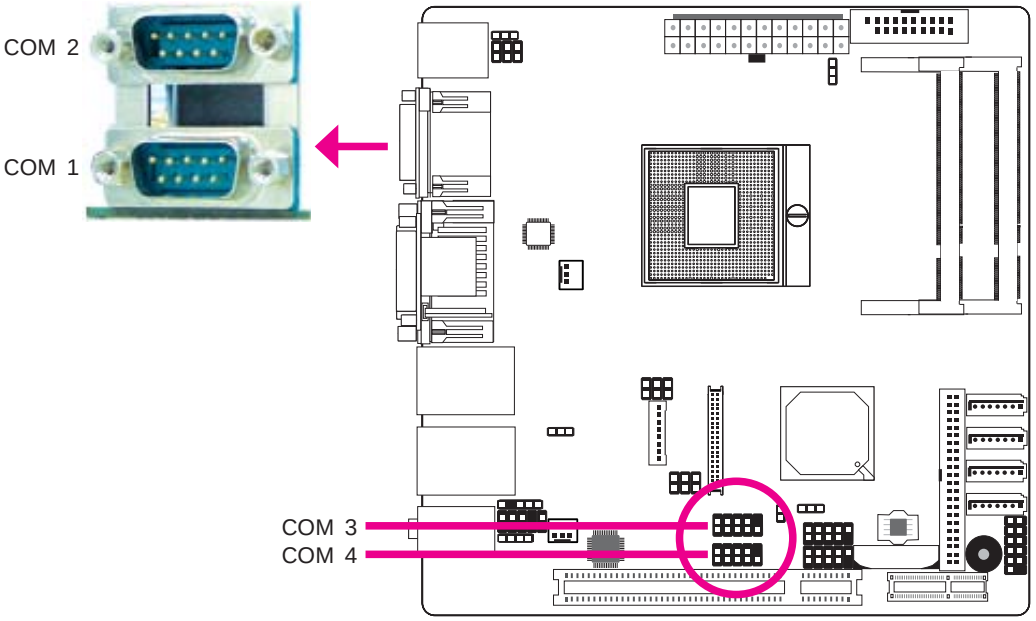
The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

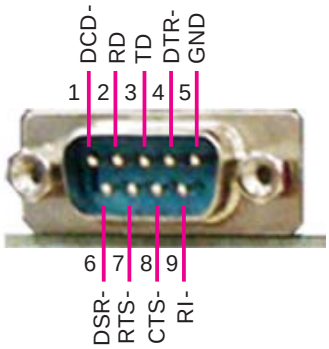
- Jumper Setting

  JP1 must be set to "2-3 On: 5V_standby". Refer to "PS/2 Power Select" in this chapter for more information.

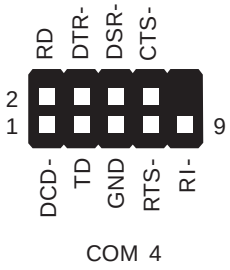
Important:
The 5V_standby power source of your power supply must support ≥720mA.

COM (Serial) Ports





COM 1 and COM 2



COM 4

COM 1, COM 2 and COM 4 are fixed at RS232.

COM 3's pin definition will vary according to JP11's settings. Refer to "COM 3 RS232/RS485 Select" in this chapter for more information.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

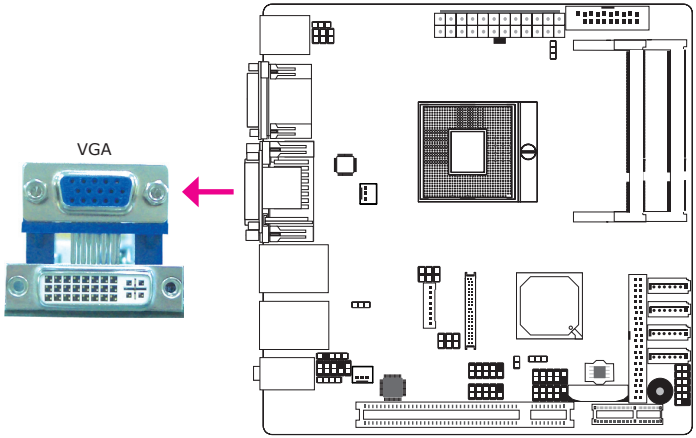
Connecting External Serial Ports

Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

BIOS Setting

Configure the serial ports in the Advanced menu ("UART Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

VGA Port



The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

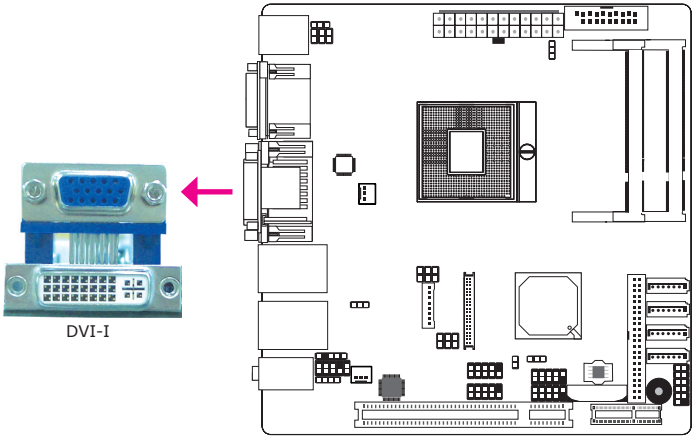
BIOS Setting

Configure the onboard VGA in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the graphics driver. Refer to chapter 4 for more information.

DVI-I Port



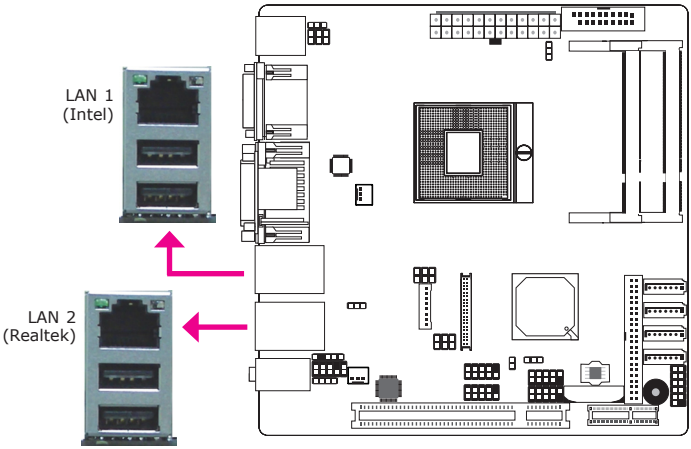
The DVI-I port is used to connect an LCD monitor. This port supports DVI-D signal only.

Connect the display device's cable connector to the DVI-I port. After you plug the cable connector into the port, gently tighten the cable screws to hold the connector in place.

BIOS Setting

Configure the display device in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

RJ45 LAN Ports



The LAN ports allow the system board to connect to a local area network by means of a network hub.

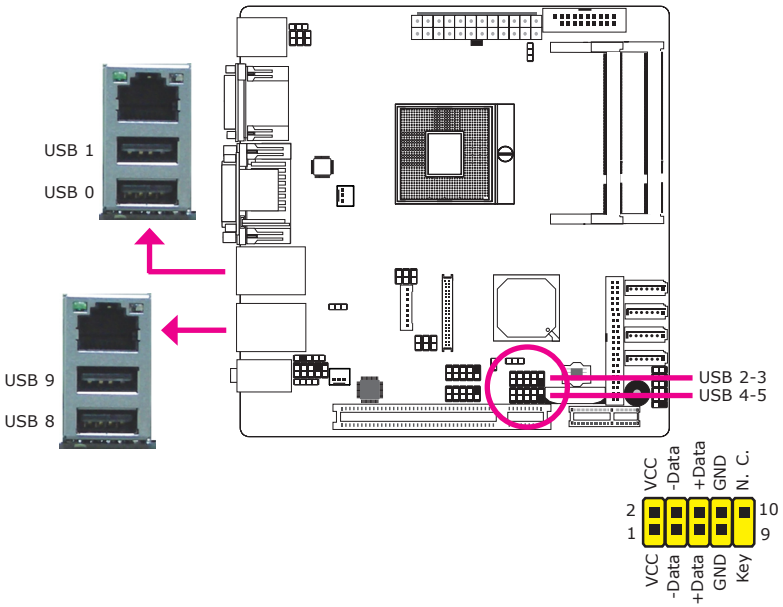
BIOS Setting

Configure the onboard LAN ports in the Chipset menu ("South Bridge submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the LAN drivers. Refer to chapter 4 for more information.

USB Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with four onboard USB 2.0/1.1 ports. The two 10-pin connectors allow you to connect 4 additional USB 2.0/1.1 ports. The USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the USB port cables to a connector.

BIOS Setting

Configure the onboard USB in the Chipset menu ("South Bridge" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

Wake-On-USB Keyboard/Mouse

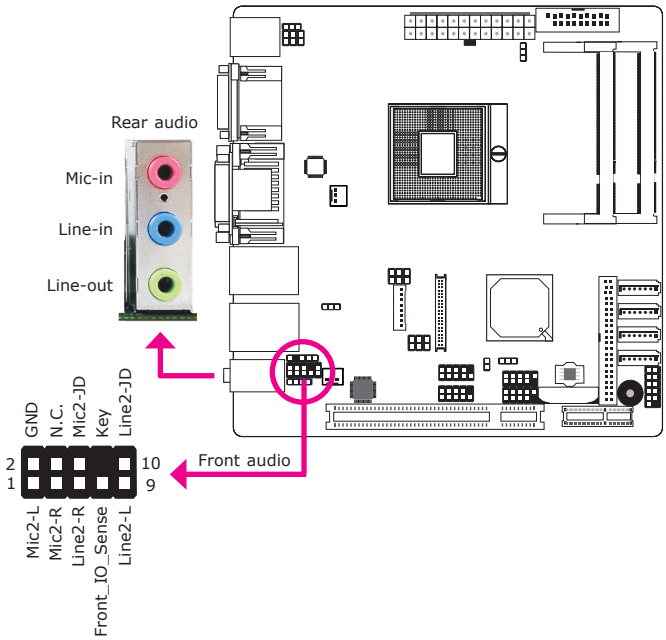
The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- Jumper Setting

  JP2 must be set to "2-3 On: 5V_standby". Refer to "USB Power Select" in this chapter for more information.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

Audio



Rear Audio

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Mic-in Jack (Pink)
  This jack is used to connect an external microphone.

- Line-in Jack (Light Blue)
  This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

- Line-out Jack (Lime)
  This jack is used to connect a headphone or external speakers.

Front Audio

The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.

BIOS Setting

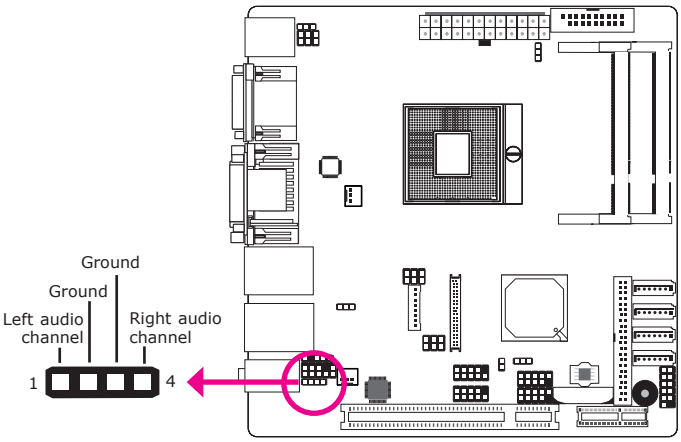
Configure the onboard audio in the Chipset menu ("South Bridge" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the audio driver. Refer to chapter 4 for more information.

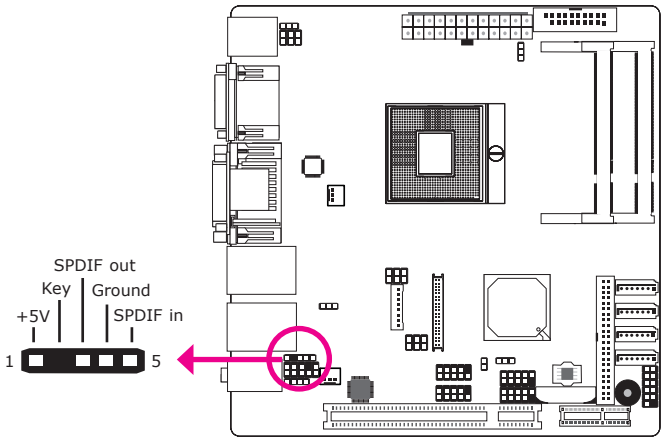
I/O Connectors

CD-in Internal Audio Connector



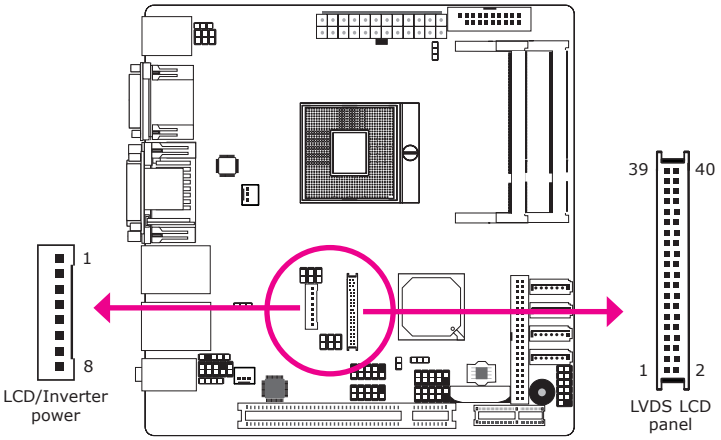
The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

S/PDIF Connector



The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.

LVDS LCD Panel Connector
LCD/Inverter Power Connector



The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector and the LCD/Inverter power connector. These connectors transmit video signals and power from the system board to the LCD Display Panel.

Refer to the next page for the pin functions of these connectors.

BIOS Setting

Configure the LCD panel in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

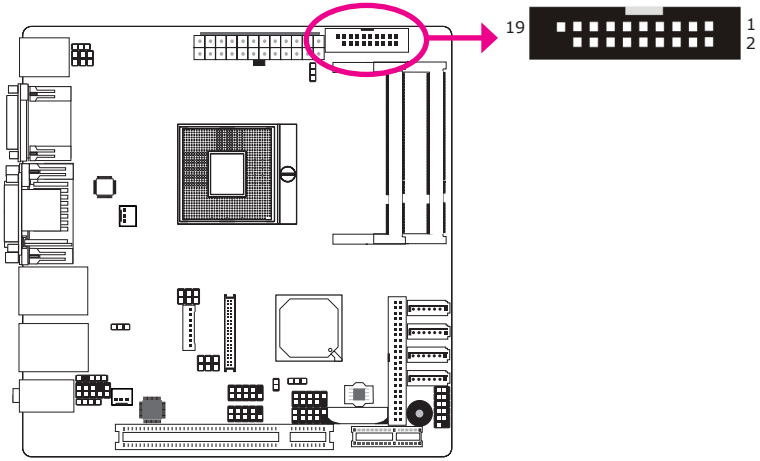
LVDS LCD Panel Connector

Pins	Function	Pins	Function
1	GND	2	GND
3	LVDS_Out3+	4	LVDS_Out7+
5	LVDS_Out3-	6	LVDS_Out7-
7	GND	8	GND
9	LVDS_Out2+	10	LVDS_Out6+
11	LVDS_Out2-	12	LVDS_Out6-
13	GND	14	GND
15	LVDS_Out1+	16	LVDS_Out5+
17	LVDS_Out1-	18	LVDS_Out5-
19	GND	20	GND
21	LVDS_Out0+	22	LVDS_Out4+
23	LVDS_Out0-	24	LVDS_Out4-
25	GND	26	GND
27	LVDS_CLK1+	28	LVDS_CLK2+
29	LVDS_CLK1-	30	LVDS_CLK2-
31	GND	32	GND
33	LVDS_DDCCLK	34	N. C.
35	LVDS_DDCDAA	36	N. C.
37	Panel Power	38	Panel Power
39	Panel Power	40	Panel Power

LCD/Inverter Power Connector

Pins	Function
1	GND
2	GND
3	Panel Inverter Brightness Voltage Control
4	Panel Power
5	+3.3V
6	Panel Backlight On/Off Control
7	+12V
8	+12V

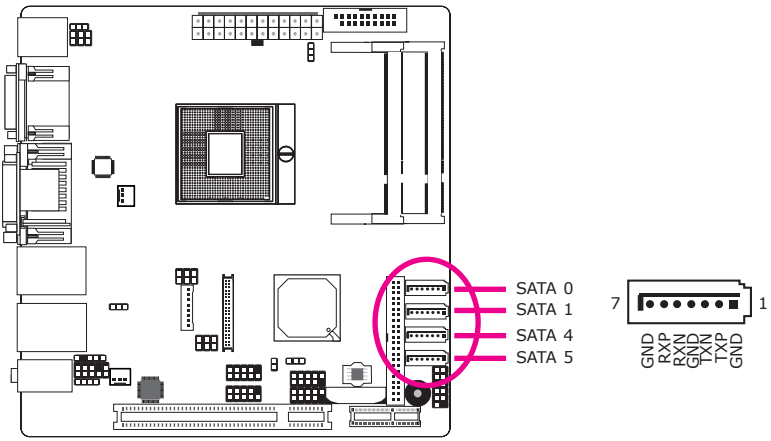
Digital I/O Connector



The Digital I/O connector provides powering-on function to an external device that is connected to this connector.

Pins	Function	Pins	Function
1	GND	2	+12V
3	DIO7	4	+12V
5	DIO6	6	GND
7	DIO5	8	VCC
9	DIO4	10	VCC
11	DIO3	12	GND
13	DIO2	14	V_5P0_STBY
15	DIO1	16	V_5P0_STBY
17	DIO0	18	GND
19	GND		

SATA (Serial ATA) Connectors



The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

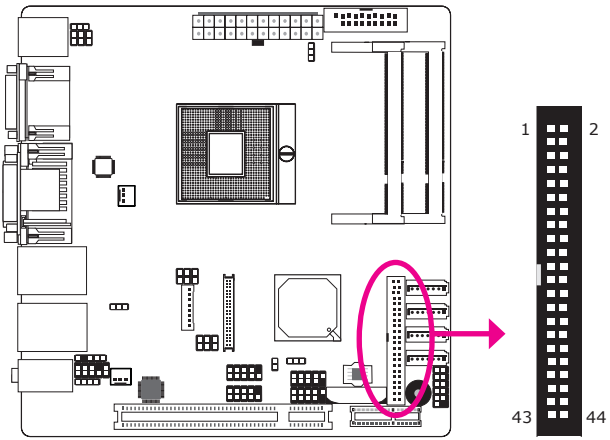
BIOS Setting

Configure the Serial ATA drives in the Advanced menu ("SATA Configuration" sub-menu) of the BIOS. Refer to chapter 3 for more information.

Configuring RAID

The system board allows configuring RAID on Serial ATA drives. Refer to chapter 5 for steps in configuring RAID.

IDE Connector



The IDE connector is used to connect hard drives. The connector on the IDE cable can be inserted into this connector only if pin 1 of the cable is aligned with pin 1 of this connector.

The IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable have 3 connectors on them, one that plugs into the IDE connector on the system board and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Note:
Refer to your disk drive user's manual for information about selecting proper drive switch settings.

Adding a Second IDE Disk Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

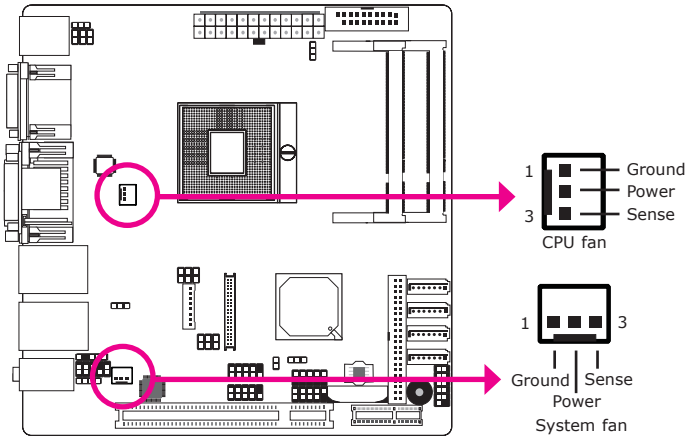
The system board supports Enhanced IDE or ATA-2, ATA/33, ATA/66 and ATA/100 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

Important:
If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

BIOS Setting

Configure the onboard IDE in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

Cooling Fan Connectors

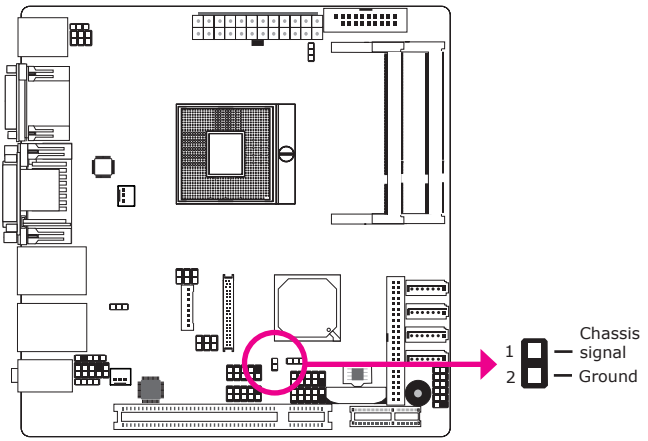


The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu ("PC Health Status" submenu) of the BIOS will display the current speed of the cooling fan. Refer to chapter 3 for more information.

Chassis Instrusion Connector

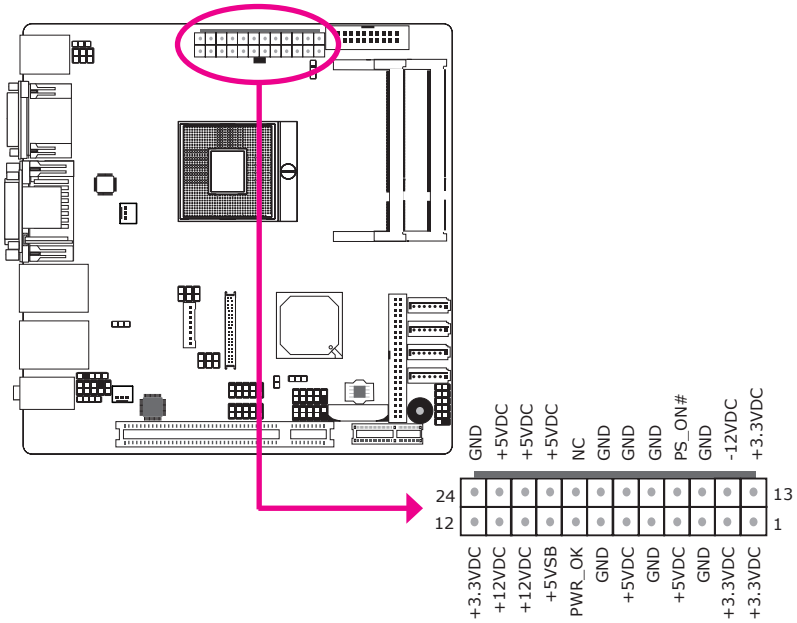


The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

MyGuard Hardware Monitor

Install the "MyGuard Hardware Monitor" utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the "MyGuard Hardware Monitor" section in chapter 4 for more information.

Power Connector



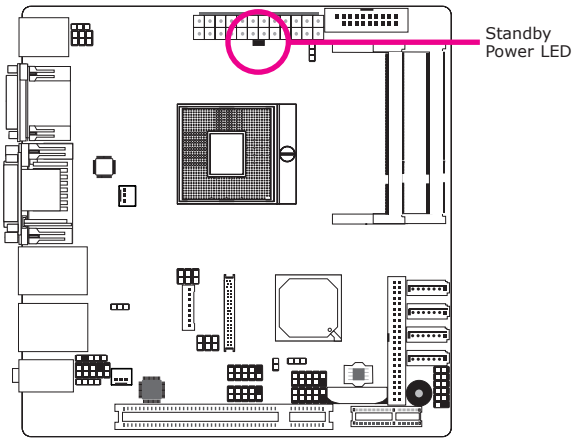
Connect a 24-pin ATX main power connector from the power supply unit to the 24-pin power connector. The connector from the power supply unit is designed to fit the 24-pin connector in only one orientation. Make sure to find the proper orientation before plugging the connector.

The system board requires a minimum of 120 Watt power supply to operate. We recommend that you use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1.

Important

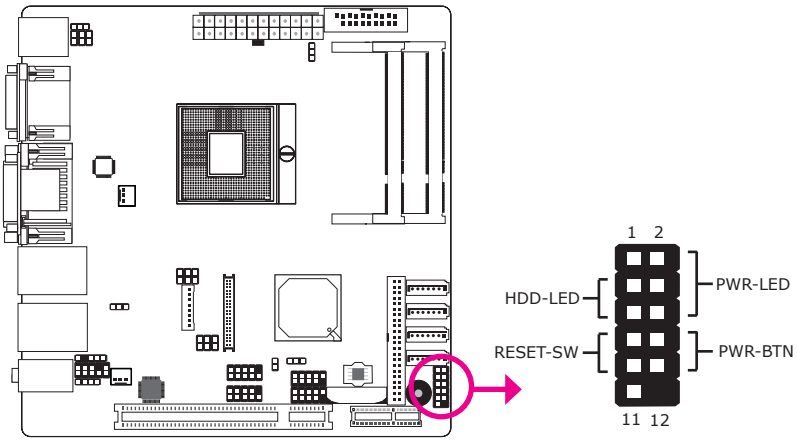
The system board consumes a minimal amount of power. Due to its low power consumption, you only need a 120W to 150W power supply. Every power supply has its minimum load of power. The system will not boot properly or may be unstable if total power consumption is less than minimum load of power supply.

Standby Power LED



This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

Front Panel Connectors



HDD-LED - HDD LED

This LED will light when the hard drive is being accessed.

RESET SW - Reset Switch

This switch allows you to reboot without having to power off the system.

PWR-BTN - Power Switch

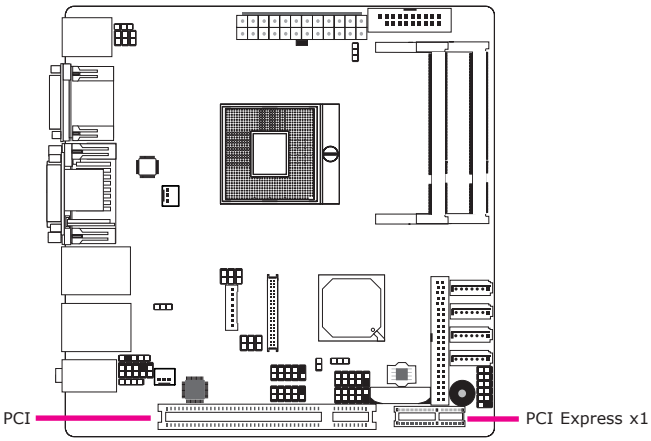
This switch is used to power on or off the system.

PWR-LED - Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

	Pin	Pin Assignment		Pin	Pin Assignment
N. C.	1	N. C.	PWR-LED	2 4 6	LED Power LED Power Signal
HDD-LED	3 5	HDD Power Signal	PWR-BTN	8 10	GND Signal
RESET SW	7 9	Ground RST Signal			
N. C.	11	N. C.	Key	12	Key

Expansion Slots



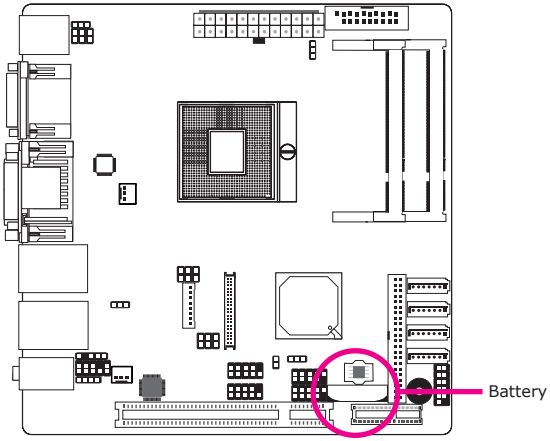
PCI Express x1

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

PCI Slot

The PCI slot supports expansion cards that comply with PCI specifications. You can install a PCI expansion card or a customized riser card designed for 1, 2 or 3 PCI slots expansion (for low profile PCI card only) into the PCI slot.

Battery



The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Chapter 3 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

Note:
The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to enter setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<Esc>	Exits to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
<F1>	Displays General Help.
<F4>	Saves and exits the Setup program.
<Enter>	Press <Enter> to enter the highlighted submenu.

Scroll Bar

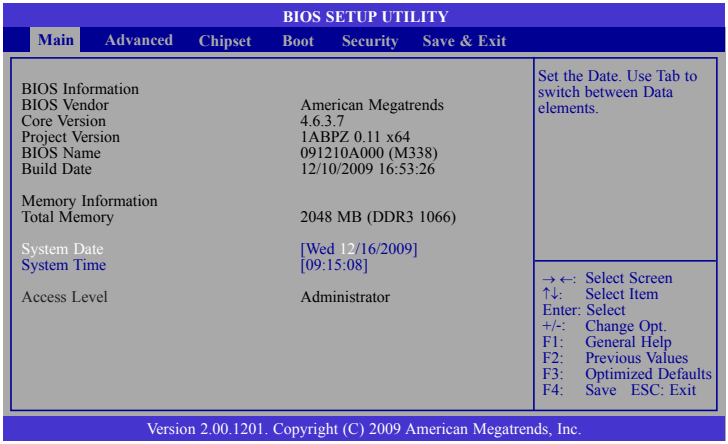
When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▸" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

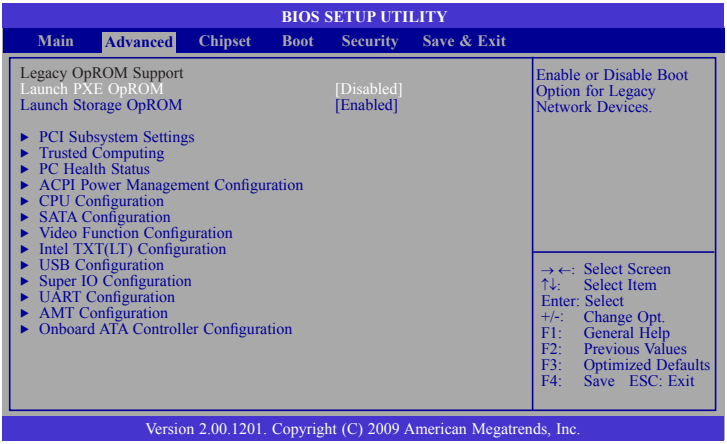
System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Important:
Setting incorrect field values may cause the system to malfunction.



Launch PXE OpROM

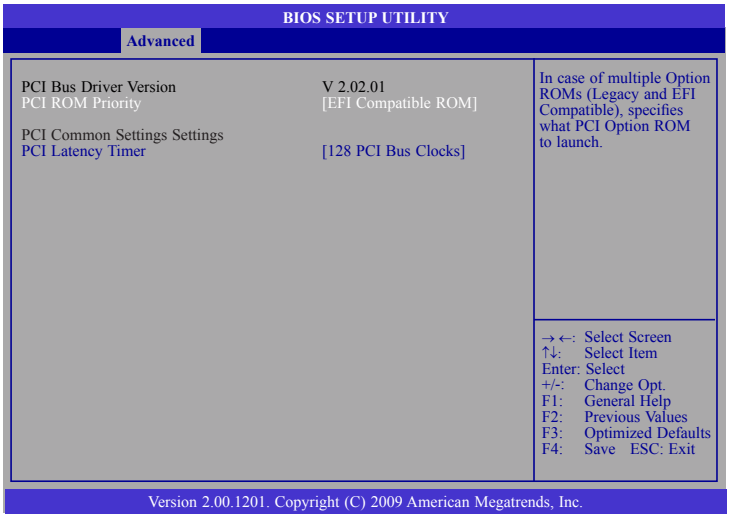
Enables or disables the boot option for legacy network devices.

Launch Storage OpROM

Enables or disables the boot option for legacy mass storage devices with option ROM.

PCI Subsystem Settings

This section is used to configure the PCI, PCI-X and PCI Express settings.


BIOS SETUP UTILITY
Advanced
PCI Bus Driver Version
V 2.02.01
PCI ROM Priority
[EFI Compatible ROM]
PCI Common Settings Settings
PCI Latency Timer
[128 PCI Bus Clocks]
In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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PCI ROM Priority

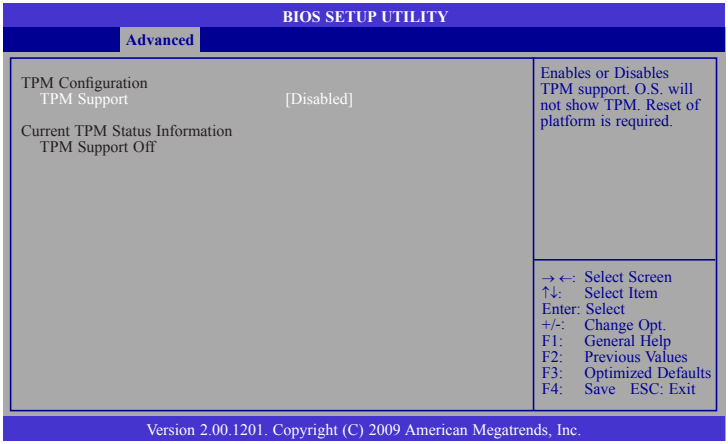
Selects the PCI Option ROM to launch in case Multiple Option ROMs (Legacy ROM and EFI Compatible ROM) are present.

PCI Latency Timer

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

Trusted Computing (Optional)

This section configures settings relevant to Trusted Computing innovations.

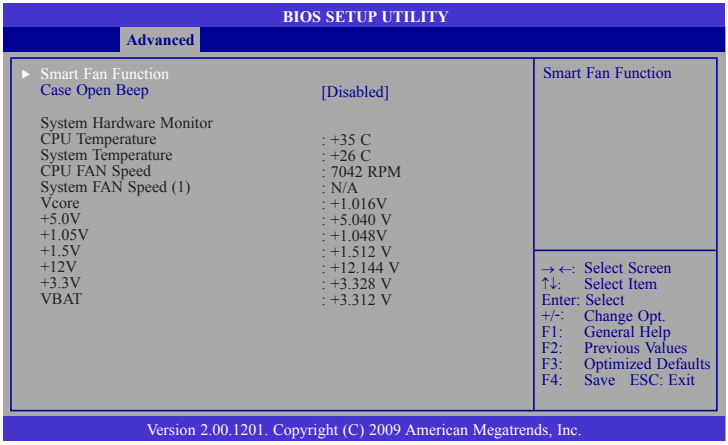


TPM Support

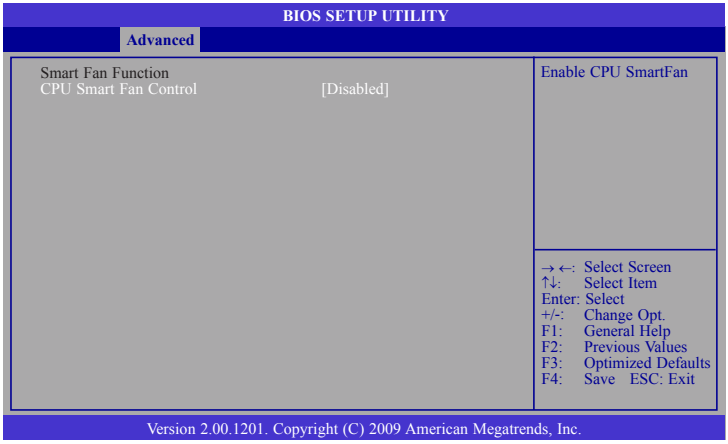
Enables or Disables TPM. O.S. will not show TPM. Resetting the platform is required.

PC Health Status

This section displays the SIO hardware health monitor.



Smart Fan Function



CPU Smart Fan Control

When this feature is set to Automatic, the CPU's fan speed will rotate according to the CPU's temperature. The higher the temperature, the faster the speed of rotation.

Case Open Beep

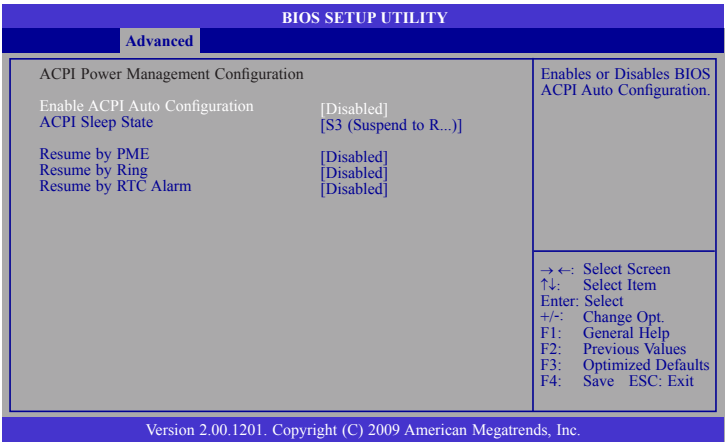
Set this field to Enabled to allow the system to alert you of a chassis intrusion event.

System Hardware Monitor to VBAT

These fields will show the temperature, fan speed and output voltage of the monitored devices or components.

ACPI Power Management Configuration

This section is used to configure the ACPI power management.



Enable ACPI Auto Configuration

Enables or disables the BIOS ACPI auto configuration.

ACPI Sleep State

Selects the highest ACPI sleep state that the system will enter when the Suspend button is pressed. The options are Suspend Disabled, S1 (CPU Stop Clock) and S3 (Suspend to RAM).

Resume by PME

When Enabled, the system uses the PCI PME (Power Management Event) signal (PCI, PCIE, LAN) to remotely wake up the system.

Resume by Ring

Set this field to Enabled to use the modem ring-on function. This will allow your system to power-on to respond to calls coming through an external or internal modem.

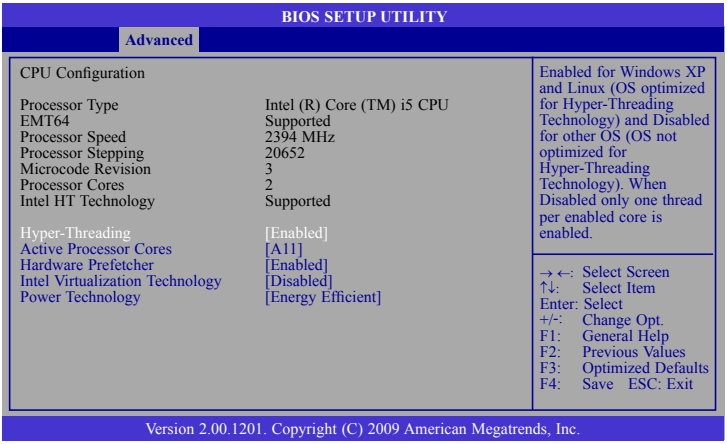
Resume by RTC Alarm

Enabled
When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the alarm date and time, the system will give priority to the incoming calls or network.

Disabled
Disables the automatic power-on function. (default)

CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.



Hyper-Threading

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.

Active Processor Cores

This field is used to enter the number of cores to enable in each processor package.

Hardware Prefetcher

Turns on or off the MLC streamer prefetcher.

Intel Virtualization Technology

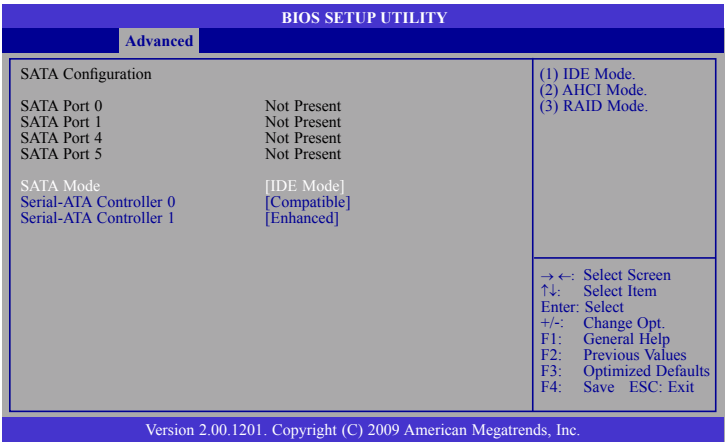
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Power Technology

Configures the power management features.

SATA Configuration

This section is used to configure SATA functions.



SATA Mode

IDE Mode
This option configures the Serial ATA drives as Parallel ATA storage devices.

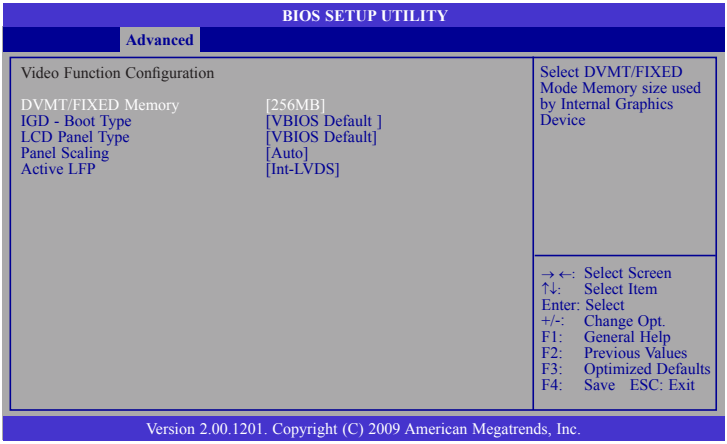
AHCI Mode
This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

RAID Mode
This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

Serial-ATA Controller 0 and Serial-ATA Controller 1

Sets the Serial ATA controller to Enhanced or Compatible.

Video Function Configuration



DVMT/FIXED Memory

Selects the DVMT/FIXED mode memory size used by the internal graphics device.

IGD - Boot Type

Selects the video device that will be activated during POST. This will not affect any external graphics that may be present.

LCD Panel Type

Selects the LCD panel used by the internal graphics device.

Panel Scaling

Selects the LCD panel scaling used by the internal graphics device.

Active LFP

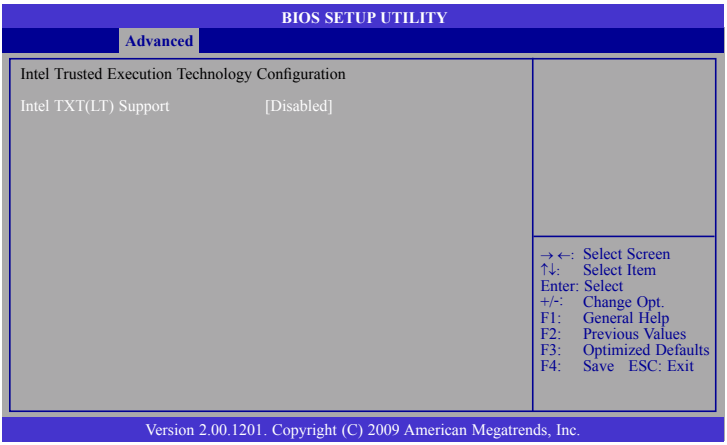
Selects the active LFP configuration.

No LVDS
VBIOS did not enable LVDS.

Int-LVDS
VBIOS will enable the LVDS driver via the integrated encoder.

Intel TXT (LT) Configuration

This section is used to configure the Intel Trusted Execution technology.

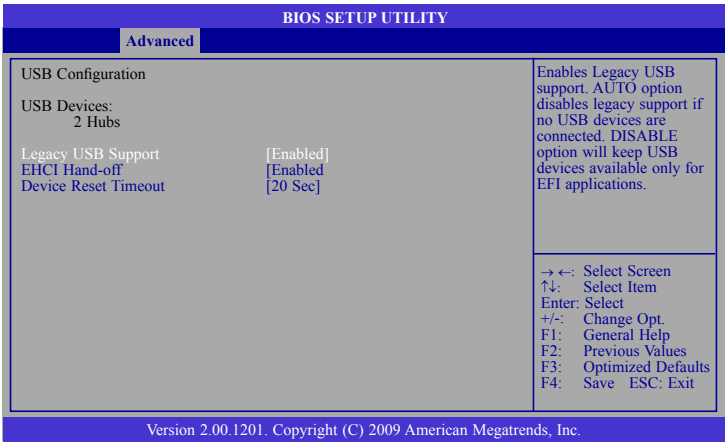


Intel TXT(LT) Support

The options are Enabled and Disabled.

USB Configuration

This section is used to configure USB.


BIOS SETUP UTILITY
Advanced
USB Configuration
USB Devices:
2 Hubs
Legacy USB Support [Enabled]
EHCI Hand-off [Enabled
Device Reset Timeout [20 Sec]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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Legacy USB Support

Enabled
Enables legacy USB.

Auto
Disables support for legacy when no USB devices are connected.

Disabled
Keeps USB devices available only for EFI applications.

EHCI Hand-off

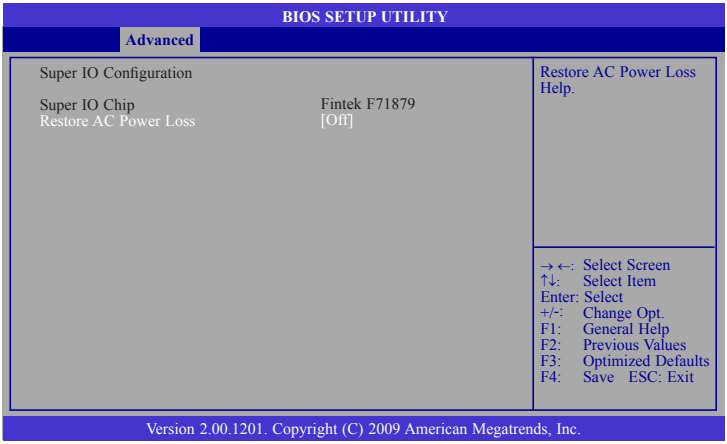
This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

Device Reset Timeout

Selects the USB mass storage device start unit command timeout.

Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



Restore AC Power Loss

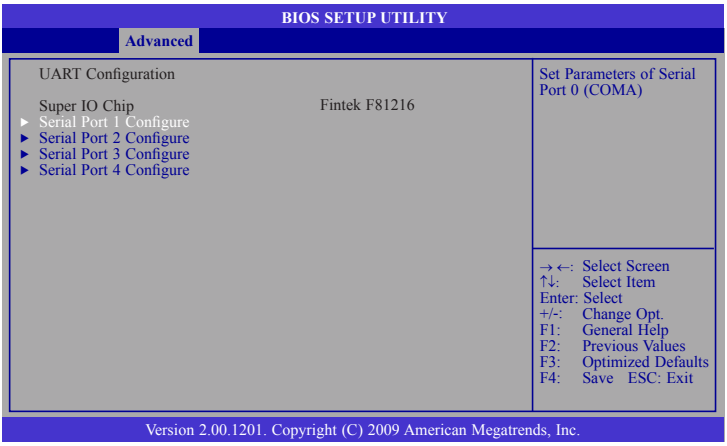
Off
When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

On
When power returns after an AC power failure, the system will automatically power-on.

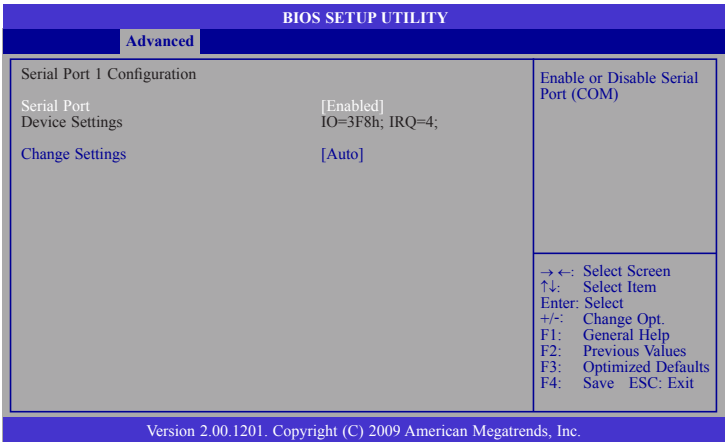
Last State
When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

UART Configuration

This section is used to configure the serial port functions.



Serial Port 1 Configure to Serial Port 4 Configure



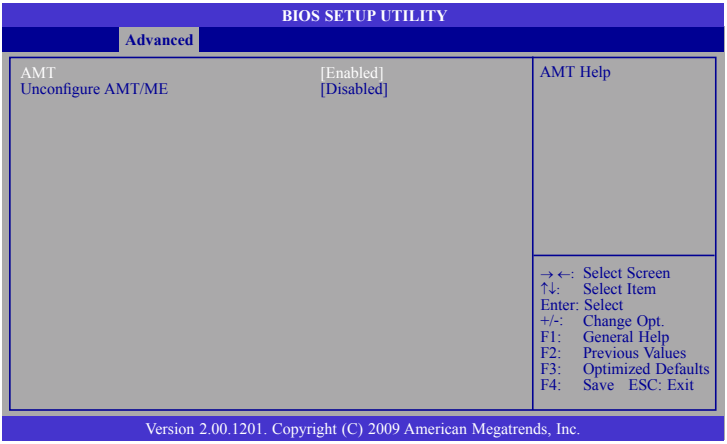
Serial Port

Enables or disables the serial port.

Change Settings

Selects the IO/IRQ setting of the I/O device.

AMT Configuration



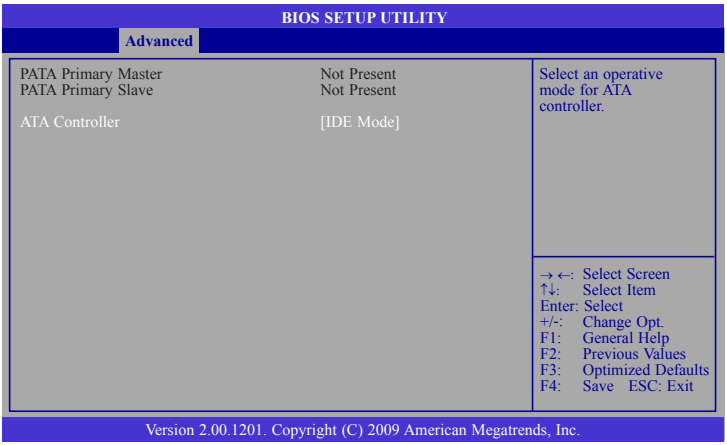
AMT

Enables or disables the AMT function.

Unconfigure AMT/ME

Select Enabled to unconfigure the AMT/ME function without the need for a password.

Onboard ATA Controller Configuration

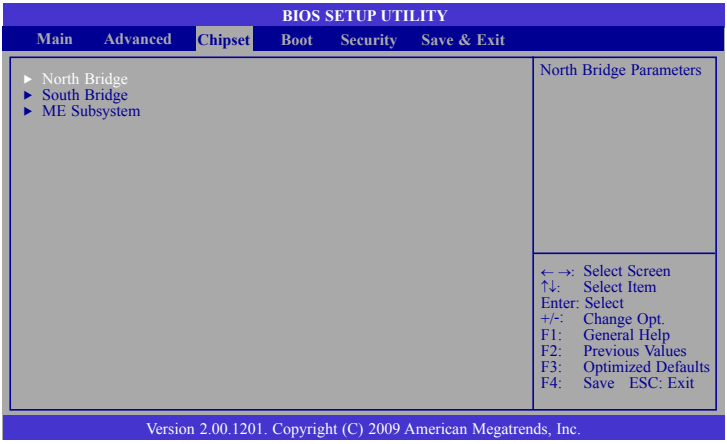


ATA Controller

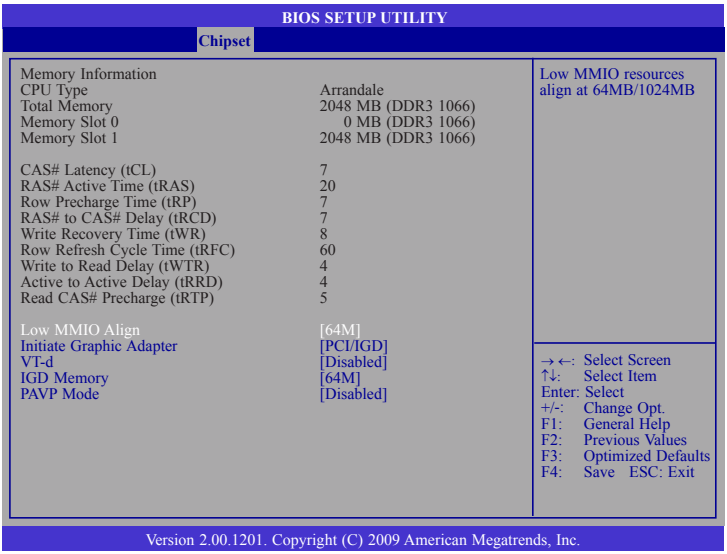
Selects the ATA controller's mode.

Chipset

Configures relevant chipset functions.



North Bridge


BIOS SETUP UTILITY
Chipset
Memory Information
CPU Type Arrandale
Total Memory 2048 MB (DDR3 1066)
Memory Slot 0 0 MB (DDR3 1066)
Memory Slot 1 2048 MB (DDR3 1066)
CAS# Latency (tCL) 7
RAS# Active Time (tRAS) 20
Row Precharge Time (tRP) 7
RAS# to CAS# Delay (tRCD) 7
Write Recovery Time (tWR) 8
Row Refresh Cycle Time (tRFC) 60
Write to Read Delay (tWTR) 4
Active to Active Delay (tRRD) 4
Read CAS# Precharge (tRTP) 5
Low MMIO Align [64M]
Initiate Graphic Adapter [PCI/IGD]
VT-d [Disabled]
IGD Memory [64M]
PAVP Mode [Disabled]
Low MMIO resources align at 64MB/1024MB
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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Low MMIO Align

Selects the low MMIO resources align at 64MB or 1024MB.

Initiate Graphic Adapter

Selects the graphics controller to use as the primary boot device.

VT-d

The options are Enabled and Disabled.

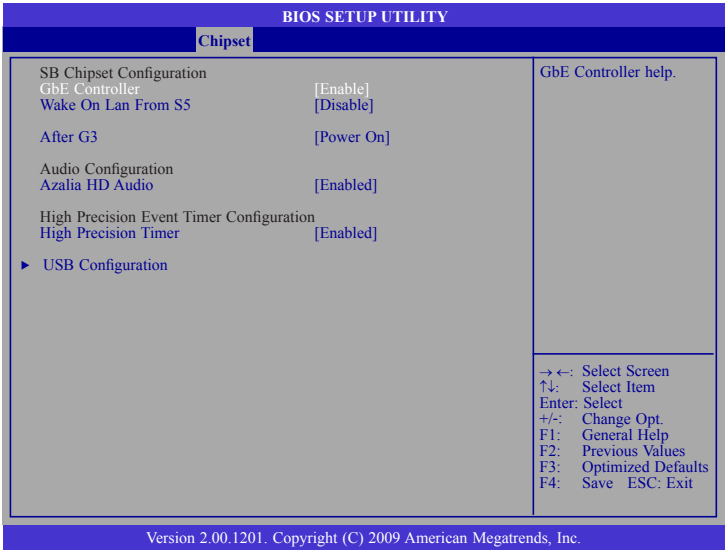
IGD Memory

Selects the internal graphics device's shared memory size.

PAVP Mode

Selects the PAVP mode.

South Bridge



GbE Controller

Enables or disables the Gigabit LAN controller.

Wake On Lan From S5

When enabled, it allows the network LAN to wake up the system from S5.

After G3

Power Off / WOL
Power-on the system via WOL after G3.

Power On
Power-on the system after G3.

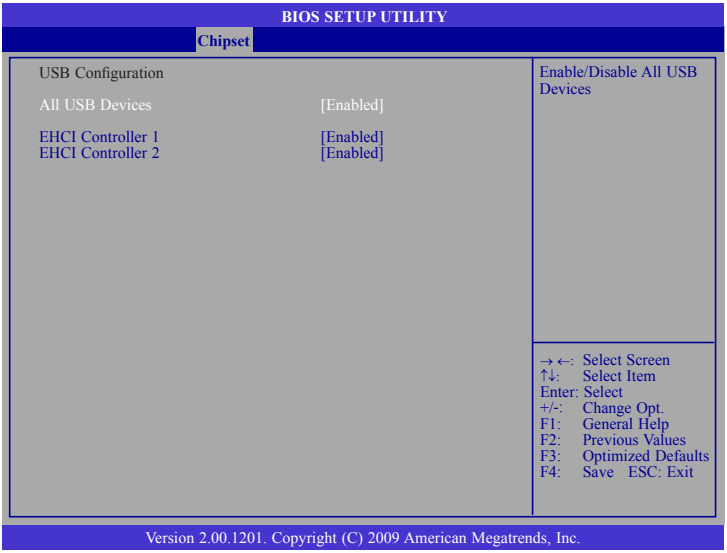
Azalia HD Audio

Enables or disables the Azalia HD audio.

High Precision Timer

Enables or disables the high precision event timer.

USB Configuration



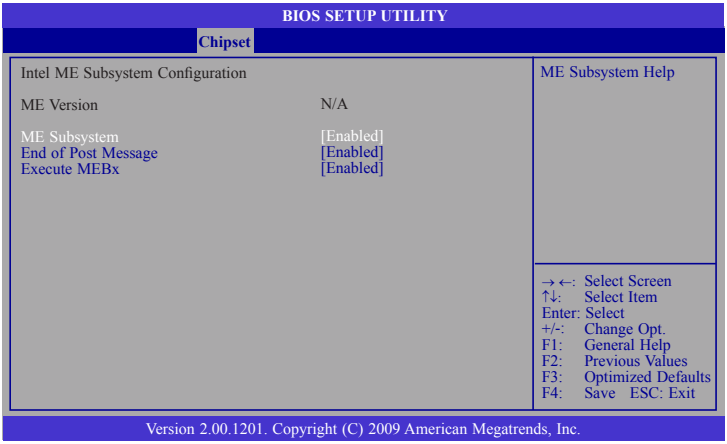
All USB Devices

Enables or disables all USB devices.

EHCI Controller 1 and EHCI Controller 2

These fields are used to enable or disable USB 2.0.

ME Subsystem



ME Subsystem

The options are Enabled and Disabled.

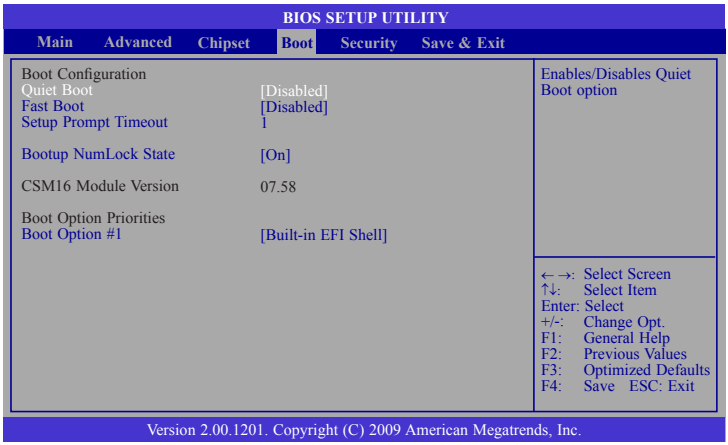
End of the POST Message

The options are Enabled and Disabled.

Execute MEBx

The options are Enabled and Disabled.

Boot



Quiet Boot

Enables or disables the quiet boot function.

Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. This doesn't affect the BBS boot options.

Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

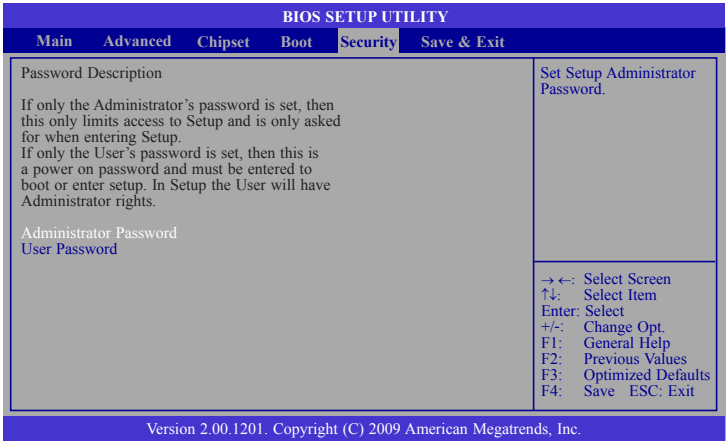
Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Boot Option #1

Selects the boot sequence of the hard drives.

Security


BIOS SETUP UTILITY
Main Advanced Chipset Boot Security Save & Exit
Password Description
If only the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If only the User's password is set, then this is a power on password and must be entered to boot or enter setup. In Setup the User will have Administrator rights.
Administrator Password
User Password
Set Setup Administrator Password.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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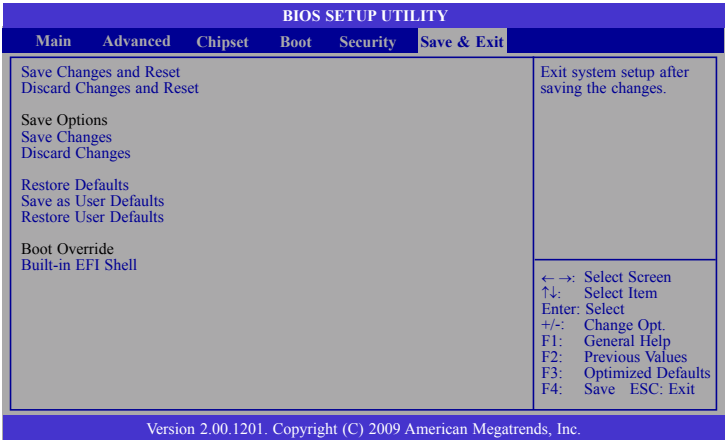
Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Save & Exit



Save Changes and Reset

To save the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK to save all changes made.

Discard Changes and Reset

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK to discard all changes made and restore the previously saved settings.

Restore Defaults

Restores the default values of all the setup options.

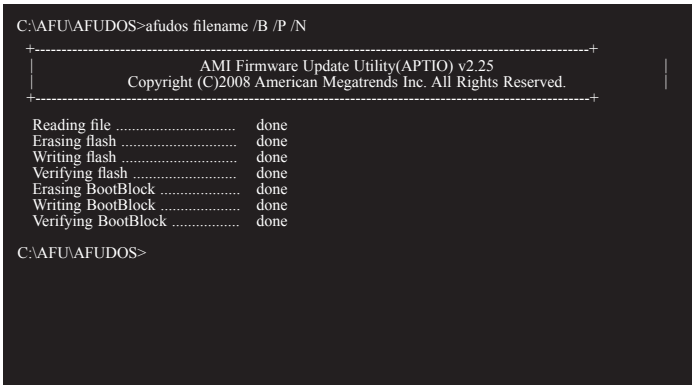
Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS. EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

A:> AFUDOS BIOS_File_Name /b /p /n

then press <Enter>.


C:\AFU\AFUDOS>afudos filename /B /P /N
AMI Firmware Update Utility(APTIO) v2.25
Copyright (C)2008 American Megatrends Inc. All Rights Reserved.
Reading file ..... done
Erasing flash ..... done
Writing flash ..... done
Verifying flash ..... done
Erasing BootBlock ..... done
Writing BootBlock ..... done
Verifying BootBlock ..... done
C:\AFU\AFUDOS>

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

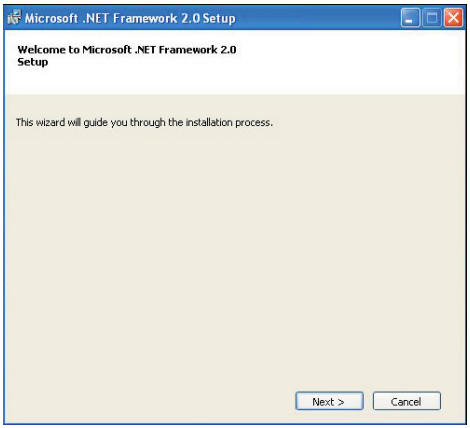
The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

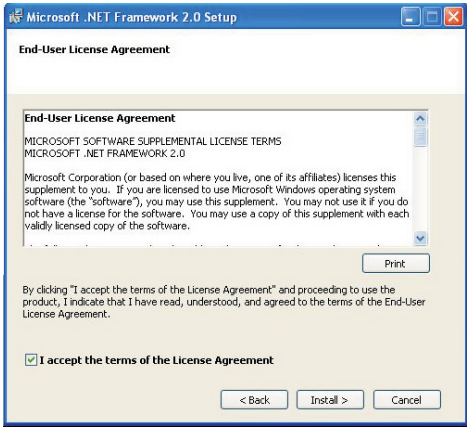
Microsoft .NET Framework 3.5

To install the driver, click "Microsoft .NET Framework 3.5" on the main menu.

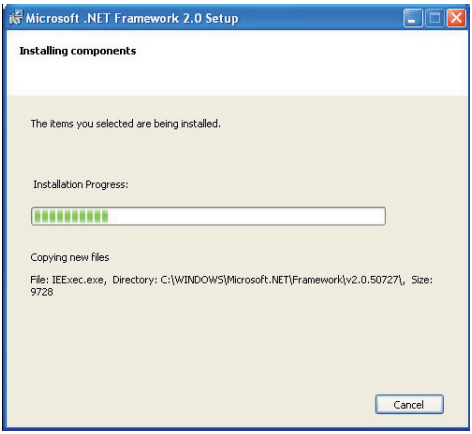
1. Setup is ready to install the driver. Click Next.


Microsoft .NET Framework 2.0 Setup
Welcome to Microsoft .NET Framework 2.0 Setup
This wizard will guide you through the installation process.
Next >
Cancel

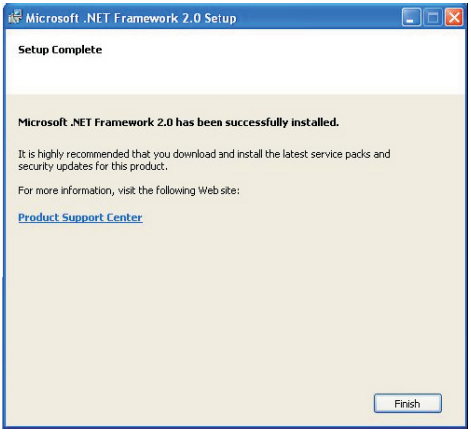
2. Read the license agreement then click "I accept the terms of the License Agreement.". Click Install.


Microsoft .NET Framework 2.0 Setup
End-User License Agreement
End-User License Agreement
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
MICROSOFT .NET FRAMEWORK 2.0
Microsoft Corporation (or based on where you live, one of its affiliates) licenses this supplement to you. If you are licensed to use Microsoft Windows operating system software (the "software"), you may use this supplement. You may not use it if you do not have a license for the software. You may use a copy of this supplement with each validly licensed copy of the software.
Print
By clicking "I accept the terms of the License Agreement" and proceeding to use the product, I indicate that I have read, understood, and agreed to the terms of the End-User License Agreement.
I accept the terms of the License Agreement
< Back
Install >
Cancel

3. Setup is now installing the driver.



4. Click Finish. Reboot the system for the new software installation to take effect.


Microsoft .NET Framework 2.0 Setup
Setup Complete
Microsoft .NET Framework 2.0 has been successfully installed.
It is highly recommended that you download and install the latest service packs and security updates for this product.
For more information, visit the following Web site:
Product Support Center
Finish

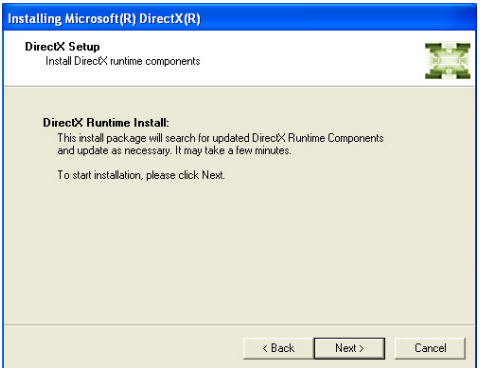
Microsoft DirectX 9.0C Driver

To install the utility, click "Microsoft DirectX 9.0C Driver" on the main menu.

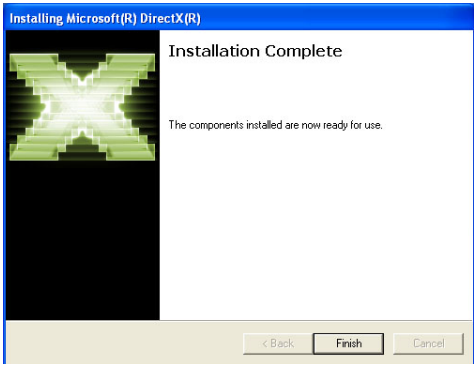
1. Click "I accept the agreement" then click Next.

Installing Microsoft(R) DirectX(R)
Welcome to setup for DirectX
The DirectX setup wizard guides you through installation of DirectX Runtime Components. Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement. You must accept the agreement to continue the setup.
MICROSOFT DirectX 9.0c
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE ("Supplemental EULA")
IMPORTANT: READ CAREFULLY - These Microsoft Corporation ("Microsoft") operating system components, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of
I accept the agreement
I don't accept the agreement
< Back
Next >
Cancel

2. To start installation, click Next.


Installing Microsoft(R) DirectX(R)
DirectX Setup
Install DirectX runtime components
DirectX Runtime Install:
This install package will search for updated DirectX Runtime Components and update as necessary. It may take a few minutes.
To start installation, please click Next.
< Back
Next >
Cancel

3. Click Finish. Reboot the system for DirectX to take effect.



Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows□ INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click "Intel Chipset Software Installation Utility" on the main menu.

1. Setup is ready to install the utility. Click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

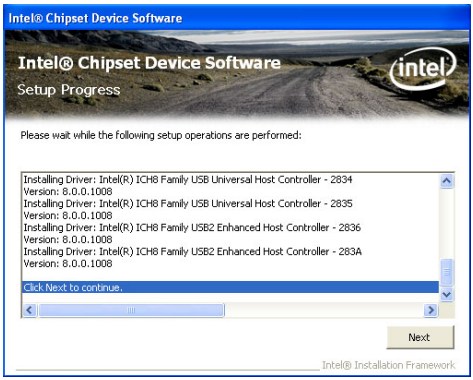
2. Read the license agreement then click Yes.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for more installation tips then click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.0.0.1008
* Target Chipset#: Intel(R) 4 Series Chipset
* Date: May 01 2008
****
< Back
Next >
Cancel
Intel® Installation Framework

4. After all setup operations are done, click Next.


Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) ICH8 Family USB Universal Host Controller - 2834
Version: 8.0.0.1008
Installing Driver: Intel(R) ICH8 Family USB Universal Host Controller - 2835
Version: 8.0.0.1008
Installing Driver: Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
Version: 8.0.0.1008
Installing Driver: Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
Version: 8.0.0.1008
Click Next to continue.
Next
Intel® Installation Framework

5. Click Finish to exit setup.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
The setup program successfully installed the Intel® Chipset Device Software onto this computer.
Click Finish to complete the setup process.
Finish
Intel® Installation Framework

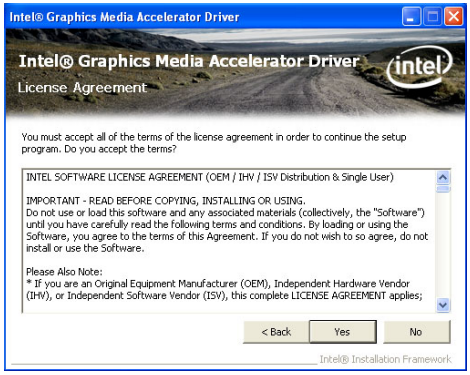
Intel Graphics Drivers

To install the driver, click "Intel Graphics Drivers" on the main menu.

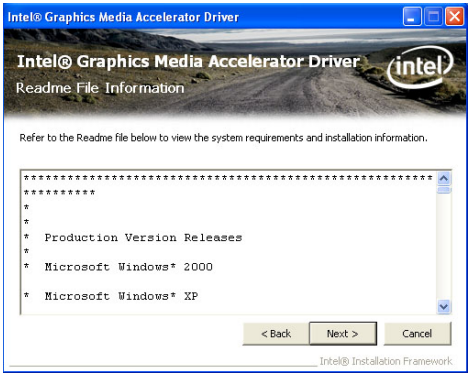
1. Setup is ready to install the graphics driver. Click Next.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Welcome to the Setup Program
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

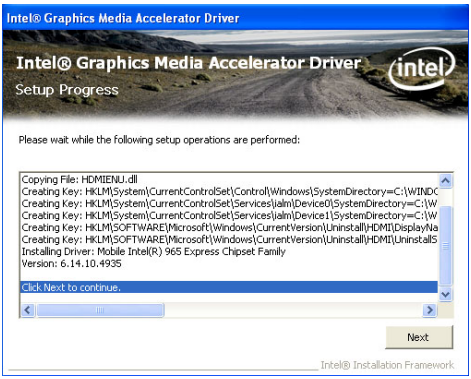
2. Read the license agreement then click Yes.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for more installation tips then click Next.



4. Setup is currently installing the driver. After installation has completed, click Next.



5. Click "Yes, I want to restart this computer now." then click Finish.

   Restarting the system will allow the new software installlation to take effect.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

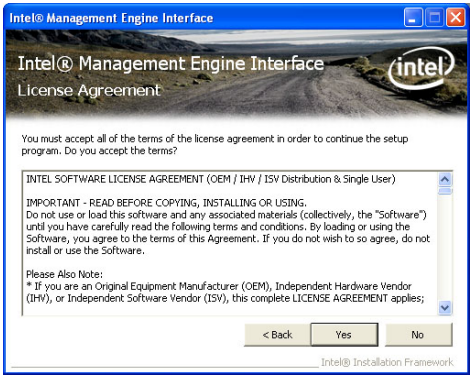
Intel Management Engine Drivers

To install the driver, click "Management Engine Interface Drivers" on the main menu.

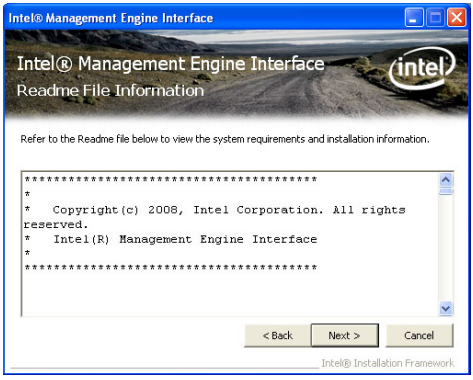
1. Setup is ready to install the driver. Click Next.

Intel® Management Engine Interface
Intel® Management Engine Interface
Welcome to the Setup Program
This setup program will install the Intel® Management Engine Interface onto this computer. It is strongly recommended that you exit all programs before continuing.
Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

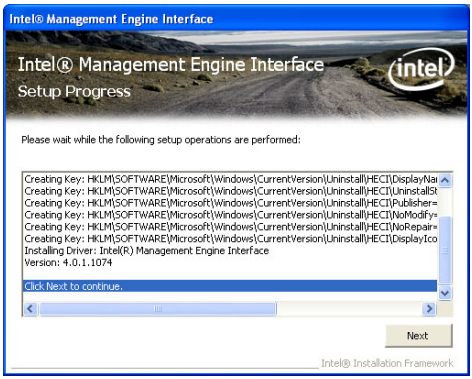
2. Read the license agreement then click Yes.


Intel® Management Engine Interface
Intel® Management Engine Interface
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for more installation tips then click Next.



4. Setup is currently installing the driver. After installation has completed, click Next.



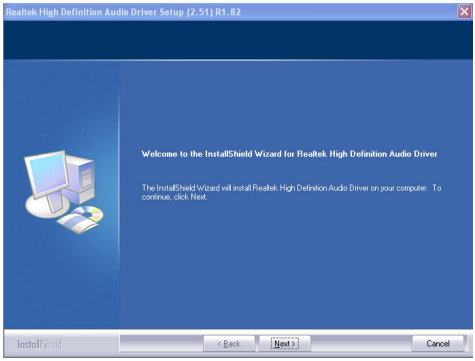
5. After completing installation, click Finish.

Intel® Management Engine Interface
Intel® Management Engine Interface
Setup Is Complete
The setup program successfully installed the Intel® Management Engine Interface onto this computer. Click Finish to complete the setup process.
Finish
Intel® Installation Framework

Audio Drivers

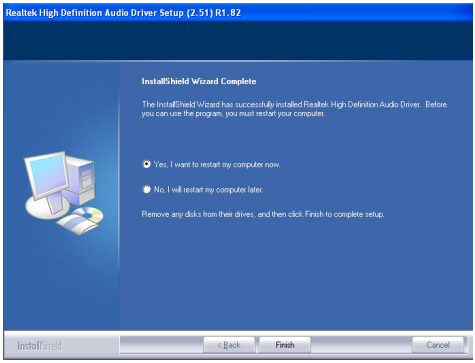
To install the driver, click "Audio Drivers" on the main menu.

1. Setup is ready to install the driver. Click Next.


Realtek High Definition Audio Driver Setup (2.51) R1.82
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

2. Click "Yes, I want to restart my computer now" then click Finish.

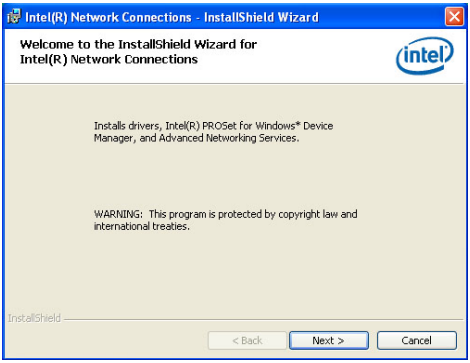
   Restarting the system will allow the new software installation to take effect.


Realtek High Definition Audio Driver Setup (2.51) R1.82
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

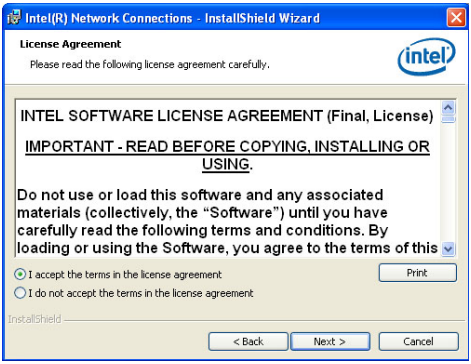
Intel LAN Drivers

To install the driver, click "Intel LAN Drivers" on the main menu.

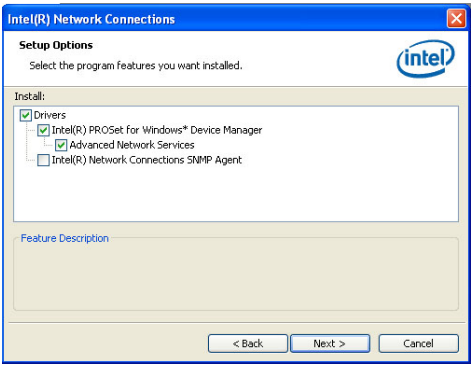
1. Setup is ready to install the driver. Click Next.


Intel(R) Network Connections - InstallShield Wizard
Welcome to the InstallShield Wizard for Intel(R) Network Connections
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
InstallShield
< Back
Next >
Cancel

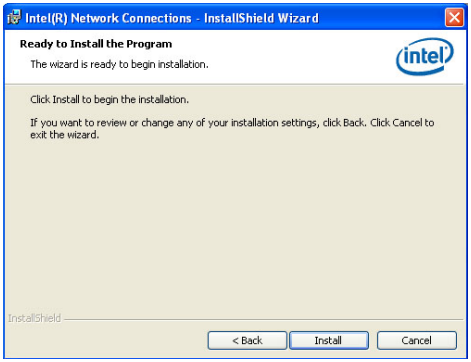
2. Click "I accept the terms in the license agreement" then click "Next".


Intel(R) Network Connections - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT (Final, License)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

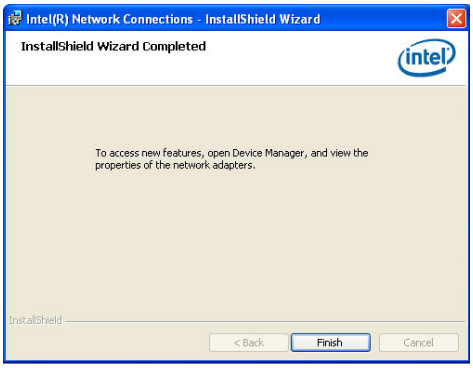
3. Select the program featuers you want installed then click Next.



4. Click Install to begin the installation.


Intel(R) Network Connections - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

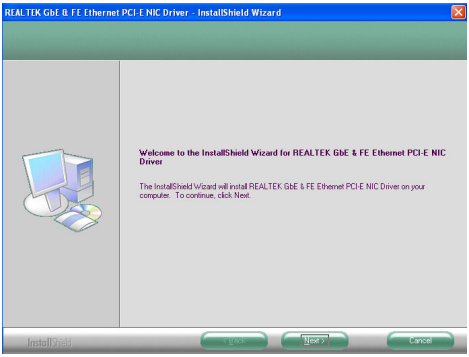
5. After completing installation, click Finish.


Intel(R) Network Connections - InstallShield Wizard
InstallShield Wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
InstallShield
< Back
Finish
Cancel

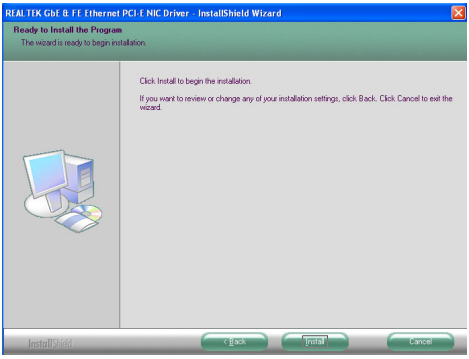
Realtek LAN Drivers

To install the driver, click "Realtek LAN Drivers" on the main menu.

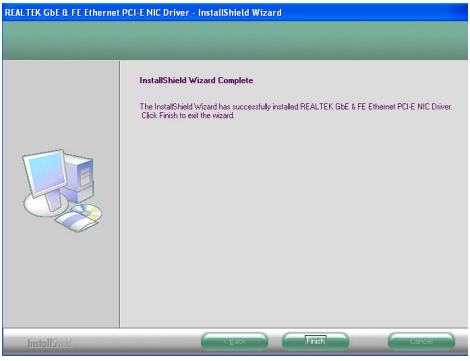
1. Setup is ready to install the driver. Click Next.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

2. Click Install to begin the installation.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

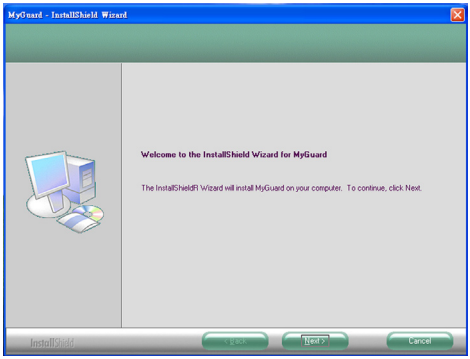
3. After completing installation, click Finish.


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

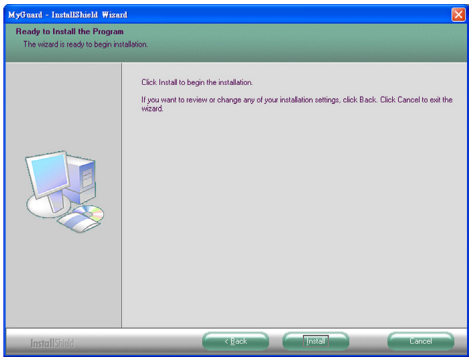
MyGuard Hardware Monitor

To install the driver, click "MyGuard Hardware Monitor" on the main menu.

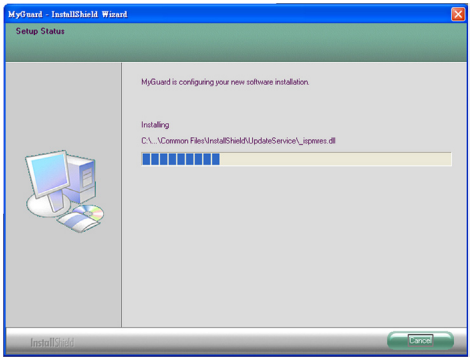
1. Setup is ready to install the utility. Click Next.


MyGuard - InstallShield Wizard
Welcome to the InstallShield Wizard for MyGuard
The InstallShield® Wizard will install MyGuard on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

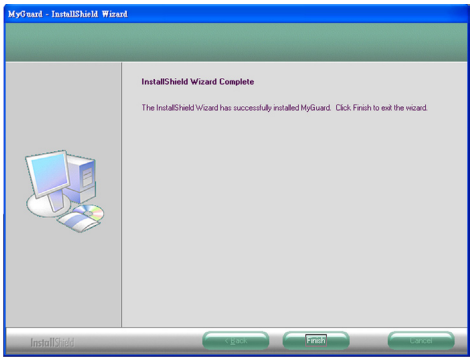
2. Click Install to begin installation.


MyGuard - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

3. Setup is currently installing the utility.



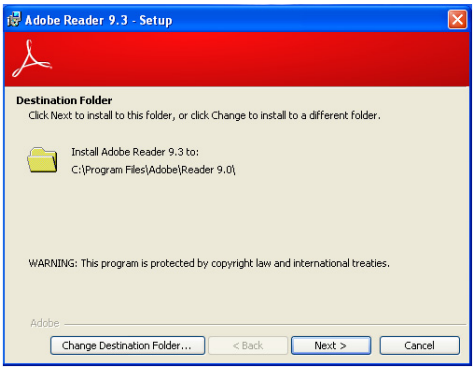
4. After completing installation, click Finish to exit setup.



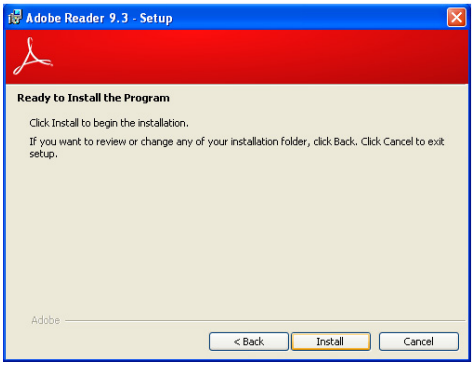
Adobe Acrobat Reader 9.3

To install the reader, click "Adobe Acrobat Reader 9.3" on the main menu.

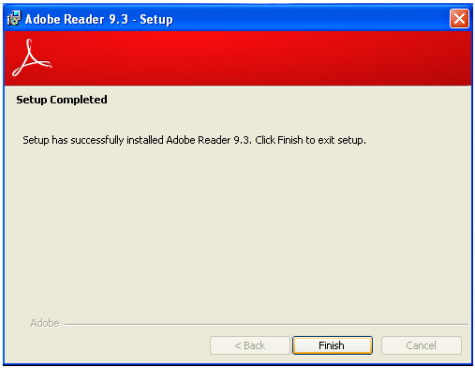
1. Click Next to install or click Change Destination Folder to select another folder.


Adobe Reader 9.3 - Setup
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Adobe Reader 9.3 to:
C:\Program Files\Adobe\Reader 9.0\
WARNING: This program is protected by copyright law and international treaties.
Adobe
Change Destination Folder...
< Back
Next >
Cancel

2. Click Install to begin installation.


Adobe Reader 9.3 - Setup
Ready to Install the Program
Click Install to begin the installation.
If you want to review or change any of your installation folder, click Back. Click Cancel to exit setup.
Adobe
< Back
Install
Cancel

3. Click Finish to exit installation.



Chapter 5 - RAID

The system board allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 5 and RAID 10.

RAID Levels

RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

RAID 10 (Mirroring and Striping)

RAID 10 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

Settings

To enable the RAID function, the following settings are required.

1. Connect the Serial ATA drives.
2. Configure Serial ATA in the AMI BIOS.
3. Configure RAID in the RAID BIOS.
4. Install the RAID driver during OS installation.
5. Install the Intel Rapid Storage Drivers.

Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

1. Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.
2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

Step 2: Configure Serial ATA in the AMI BIOS

1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.
2. Configure Serial ATA in the appropriate fields.
3. Save the changes in the Save & Exit menu.
4. Reboot the system.

Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP or Windows® 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

1. Start Windows Setup by booting from the installation CD.

2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.

3. Press <S> to "Specify Additional Device".

4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the RAID driver diskette.

5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

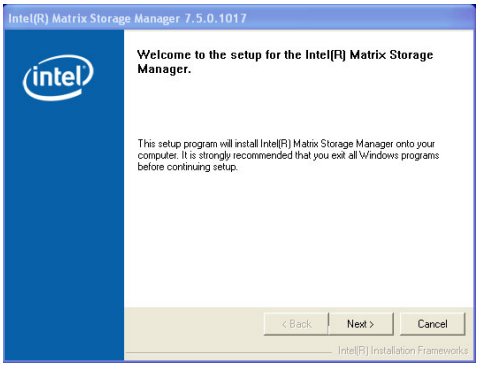
Step 5: Install the Intel Rapid Storage Drivers

The Intel Rapid Storage Drivers can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/or SATA drives. It enables enhanced performance and power management for the storage subsystem.

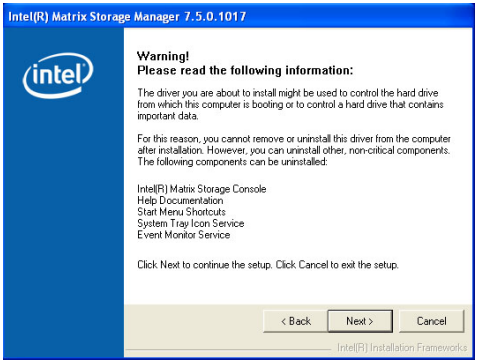
1. Insert the provided CD into an optical drive.

2. Click "Intel Rapid Storage Drivers" on the main menu.

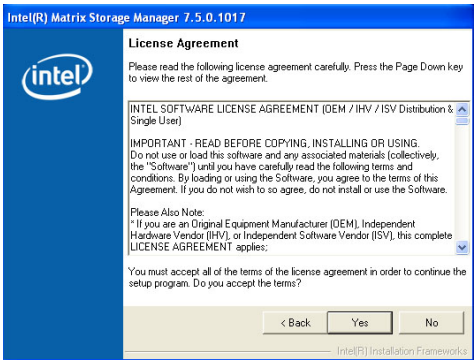
3. Setup is ready to install the utility. Click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Welcome to the setup for the Intel(R) Matrix Storage Manager.
This setup program will install Intel(R) Matrix Storage Manager onto your computer. It is strongly recommended that you exit all Windows programs before continuing setup.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

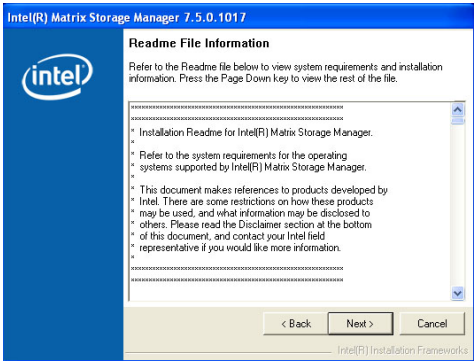
4. Read the warning carefully then click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Warning!
Please read the following information:
The driver you are about to install might be used to control the hard drive from which this computer is booting or to control a hard drive that contains important data.
For this reason, you cannot remove or uninstall this driver from the computer after installation. However, you can uninstall other, non-critical components. The following components can be uninstalled:
Intel(R) Matrix Storage Console
Help Documentation
Start Menu Shortcuts
System Tray Icon Service
Event Monitor Service
Click Next to continue the setup. Click Cancel to exit the setup.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

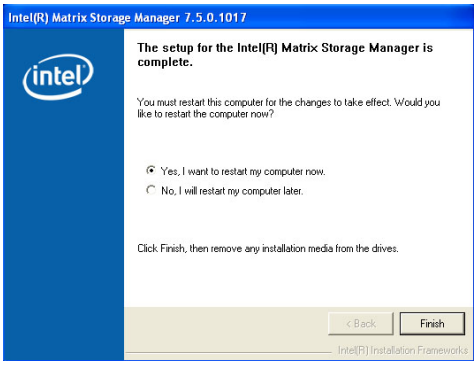
5. Read the license agreement then click Yes.


Intel(R) Matrix Storage Manager 7.5.0.1017
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

6. Go through the readme document to view system requirements and installation information then click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Readme File Information
Refer to the Readme file below to view system requirements and installation information. Press the Page Down key to view the rest of the file.
* Installation Readme for Intel(R) Matrix Storage Manager.
* Refer to the system requirements for the operating
* systems supported by Intel(R) Matrix Storage Manager.
* This document makes references to products developed by
* Intel. There are some restrictions on how these products
* may be used, and what information may be disclosed to
* others. Please read the Disclaimer section at the bottom
* of this document, and contact your Intel field
* representative if you would like more information.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

7. Click "Yes, I want to restart my computer now" then click Finish.


Intel(R) Matrix Storage Manager 7.5.0.1017
The setup for the Intel(R) Matrix Storage Manager is complete.
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click Finish, then remove any installation media from the drives.
< Back
Finish
Intel(R) Installation Frameworks

Chapter 6 - Intel AMT Settings

Overview

Intel Active Management Technology (Intel® AMT) combines hardware and software solution to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel® AMT provides the following functions.

- Discover

  Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits.

- Repair

  Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime.

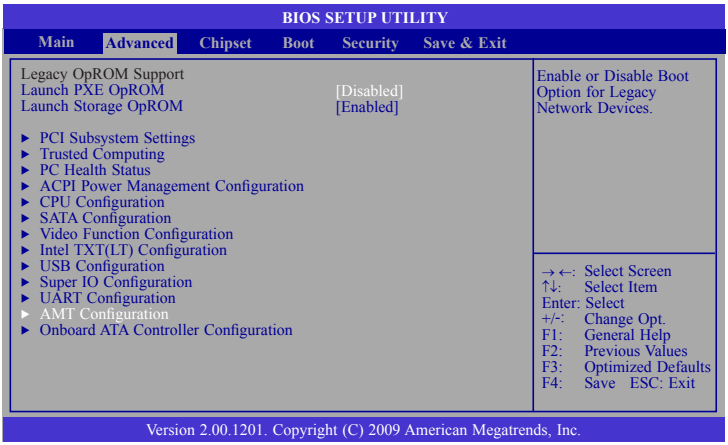
- Protect

  Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed.

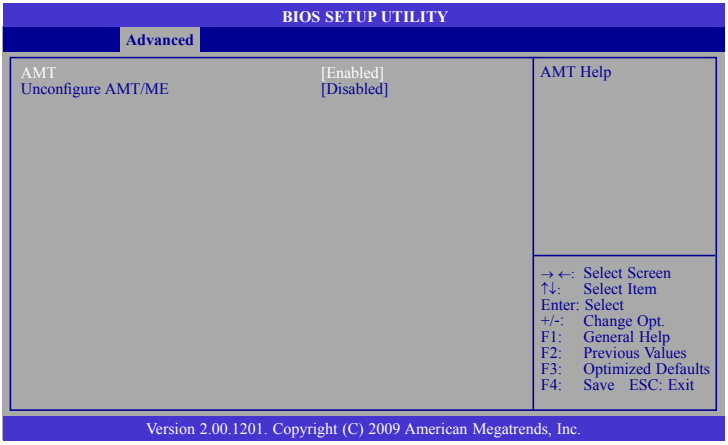
Enable Intel® AMT in the AMI BIOS

1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.

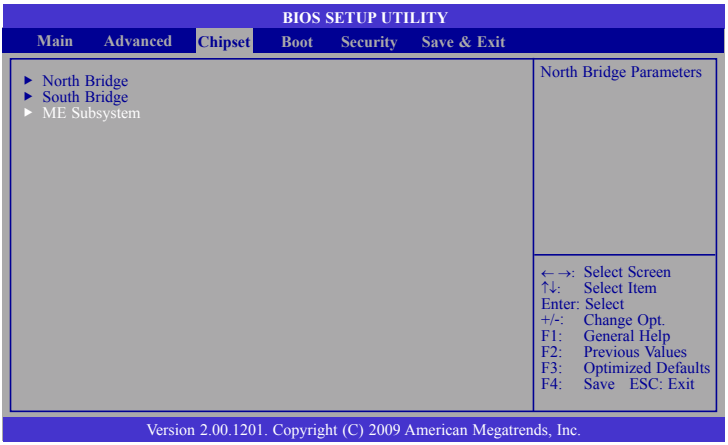
2. In the **Advanced** menu, select **AMT Configuration**.


BIOS SETUP UTILITY
Main Advanced Chipset Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
▶ PCI Subsystem Settings
▶ Trusted Computing
▶ PC Health Status
▶ ACPI Power Management Configuration
▶ CPU Configuration
▶ SATA Configuration
▶ Video Function Configuration
▶ Intel TXT(LT) Configuration
▶ USB Configuration
▶ Super IO Configuration
▶ UART Configuration
▶ AMT Configuration
▶ Onboard ATA Controller Configuration
Enable or Disable Boot Option for Legacy Network Devices.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.

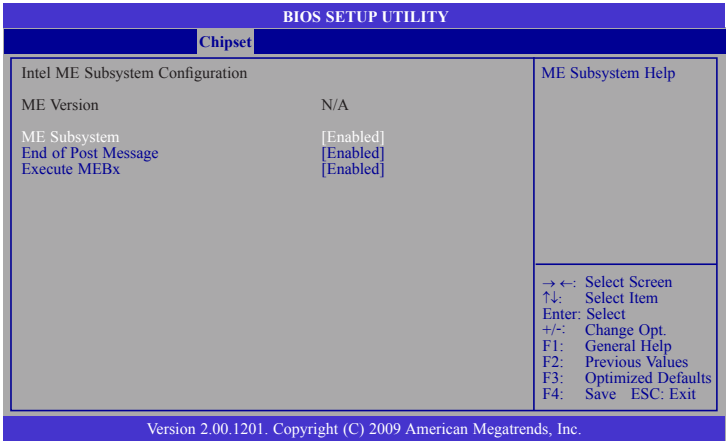
3. In the **AMT** field, select **Enabled**.



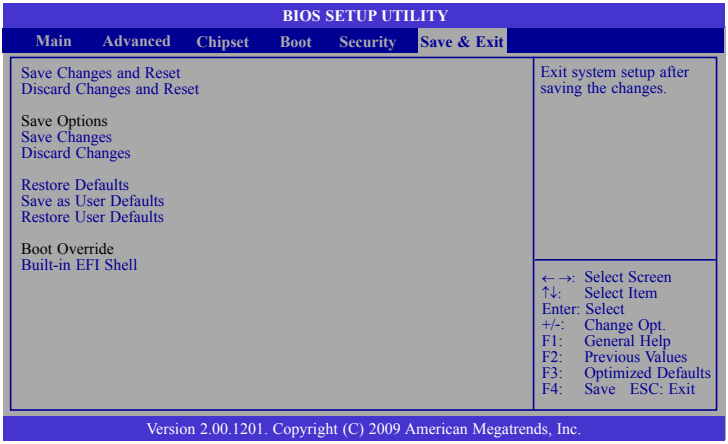
4. In the **Chipset** menu, select **ME Subsystem**.



5. In the **ME Subsystem** field, select **Enabled**.

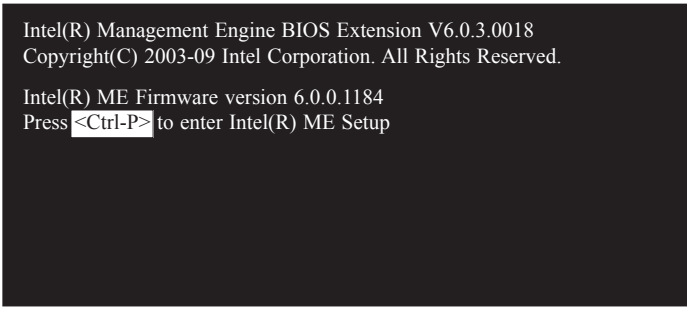


6. In the **Save & Exit** menu, select **Save Changes and Exit** then select **OK**.

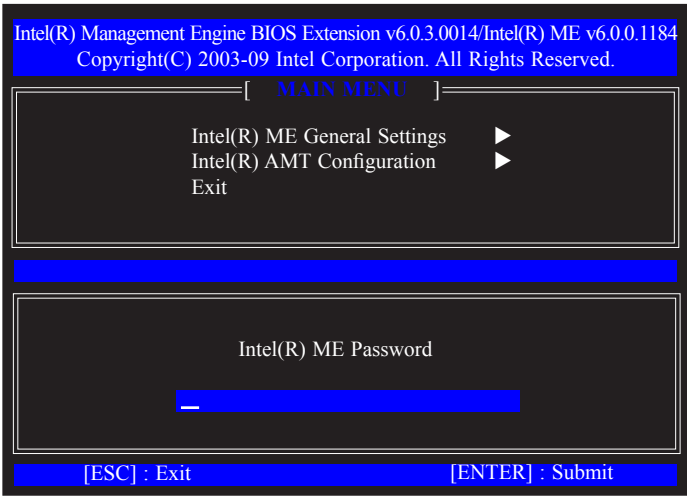


Enable Intel® AMT in the Intel® Management Engine BIOS Extension (MEBX) Screen

1. When the system reboots, the following message will be displayed. Press **<Ctrl-P>** as soon as the message is displayed; as this message will be displayed for only a few seconds.

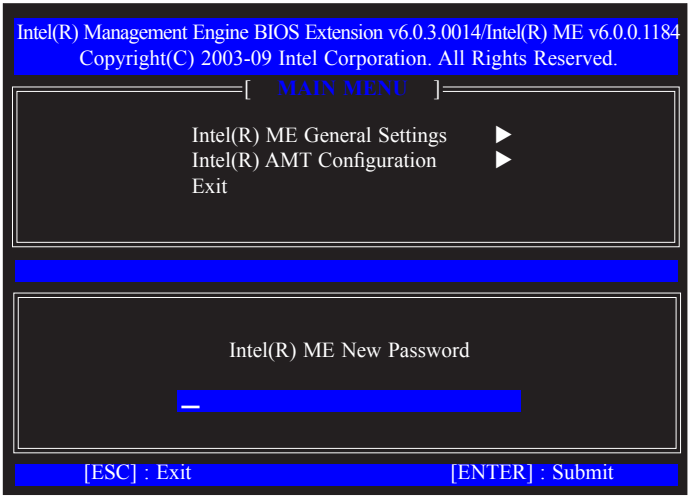

Intel(R) Management Engine BIOS Extension V6.0.3.0018
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
Intel(R) ME Firmware version 6.0.0.1184
Press <Ctrl-P> to enter Intel(R) ME Setup

2. You will be prompted for a password. The default password is "**admin**". Enter the default password in the space provided under Intel(R) ME Password then press Enter.

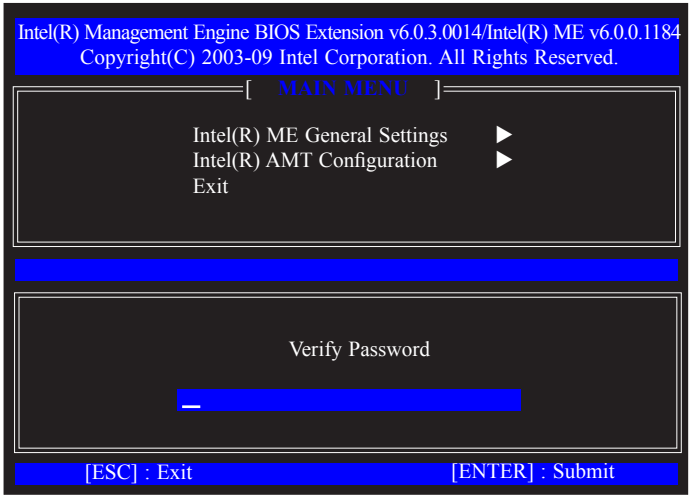

Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings
Intel(R) AMT Configuration
Exit
Intel(R) ME Password
[ESC] : Exit
[ENTER] : Submit

3. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:

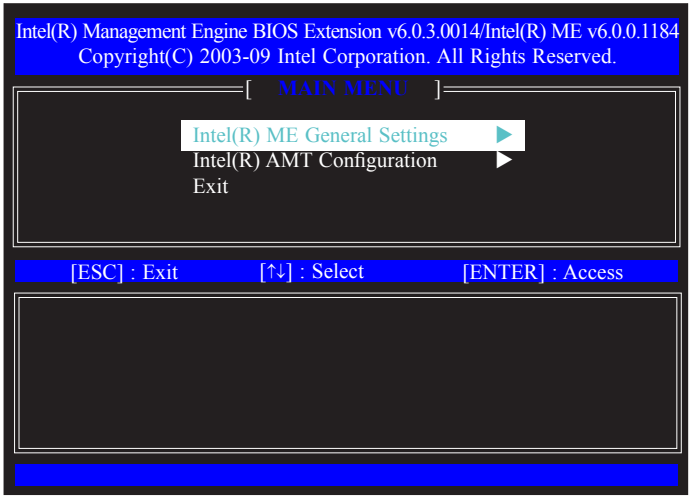
   - 8-32 characters
   - Strong 7-bit ASCII characters excluding **: ,** and **"** characters
   - At least one digit character (0, 1, ...9)
   - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, $, ;)
   - Both lower case and upper case characters


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings
Intel(R) AMT Configuration
Exit
Intel(R) ME New Password
[ESC] : Exit
[ENTER] : Submit

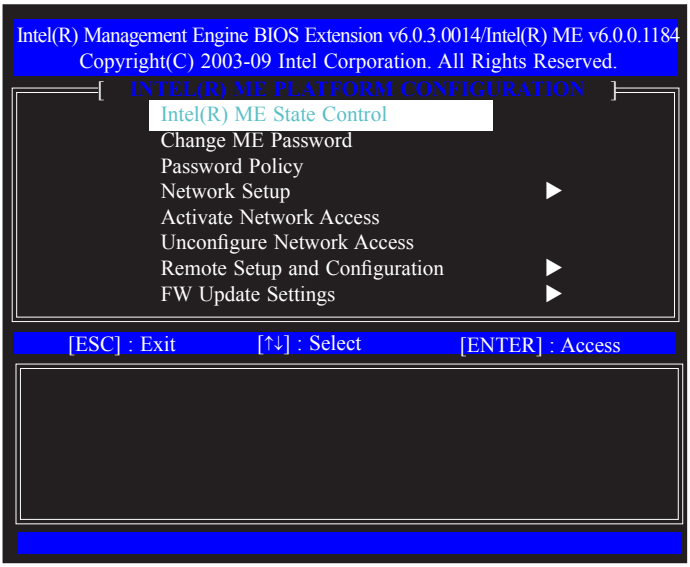
4. You will be asked to verify the password. Enter the same new password in the space provided under Verify Password then press Enter.



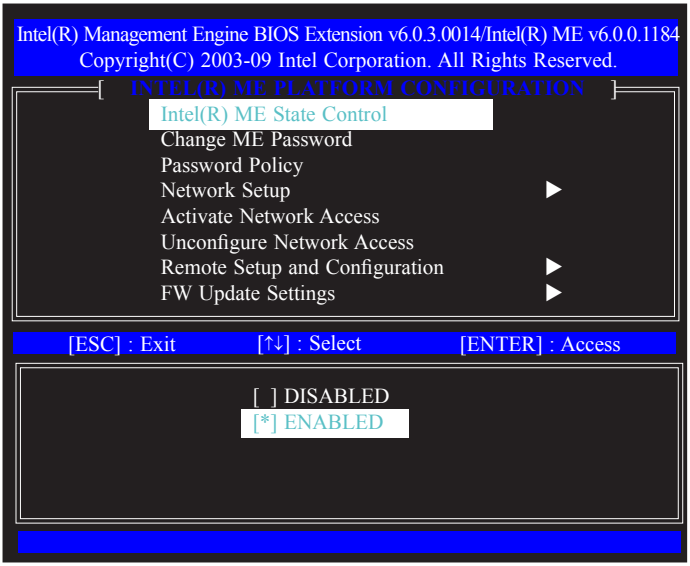
5. Select **Intel(R) ME General Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings
Intel(R) AMT Configuration
Exit
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

6. Select **Intel(R) ME State Control** then press Enter.



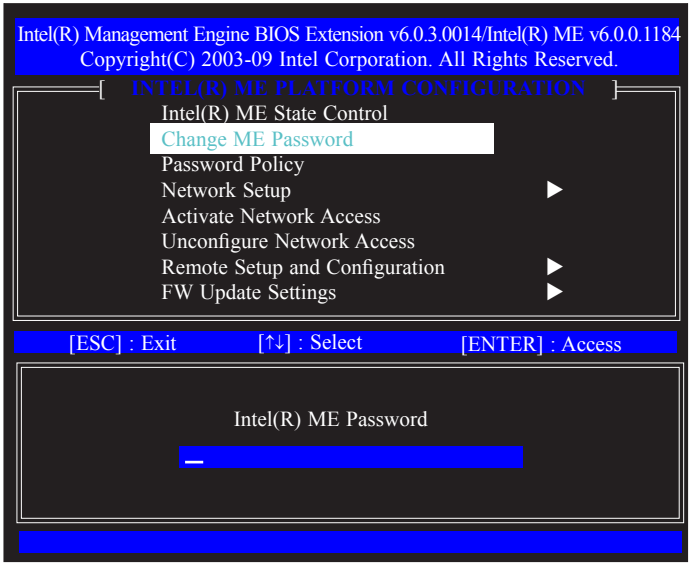
7. Select **Enabled** then press Enter.



8. Select **Change ME Password** then press Enter.

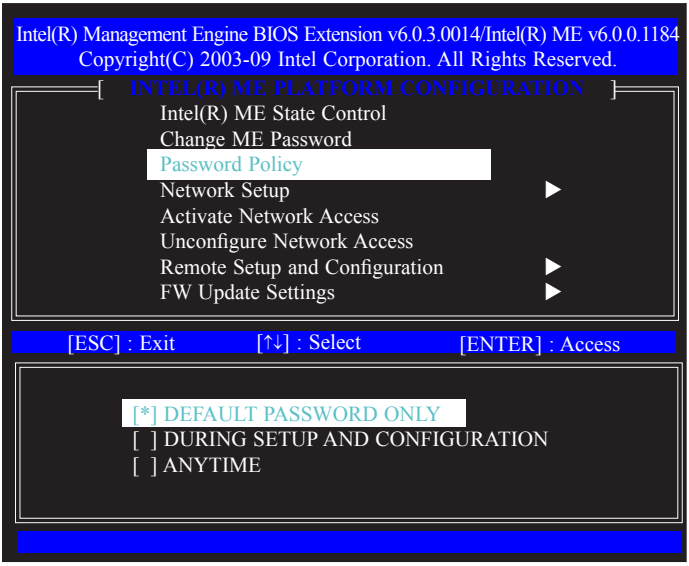
   You will be prompted for a password. The default password is "**admin**". Enter the default password in the space provided under Intel(R) ME Password then press Enter.

   - 8-32 characters
   - Strong 7-bit ASCII characters excluding **: ,** and **"** characters
   - At least one digit character (0, 1, ...9)
   - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, $, ;)
   - Both lower case and upper case characters

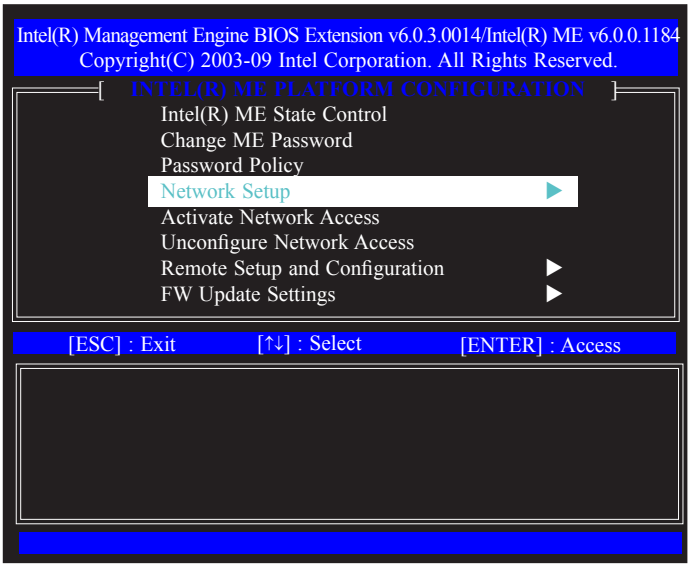


9. Select **Password Policy** then press Enter.

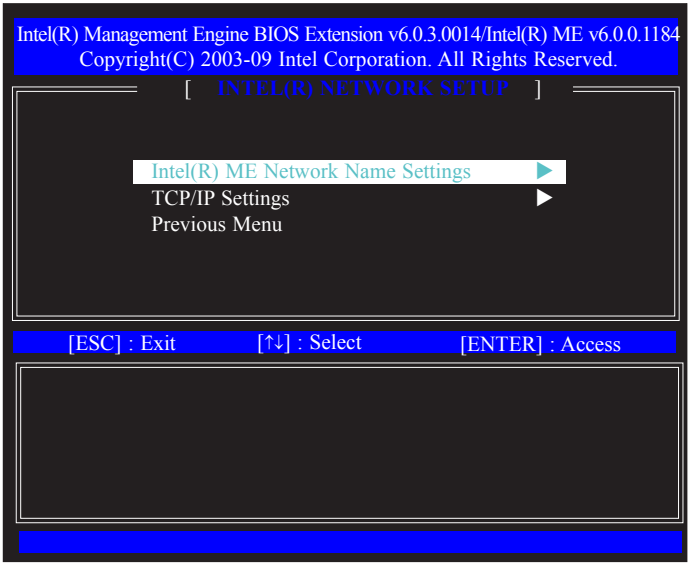
   You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.



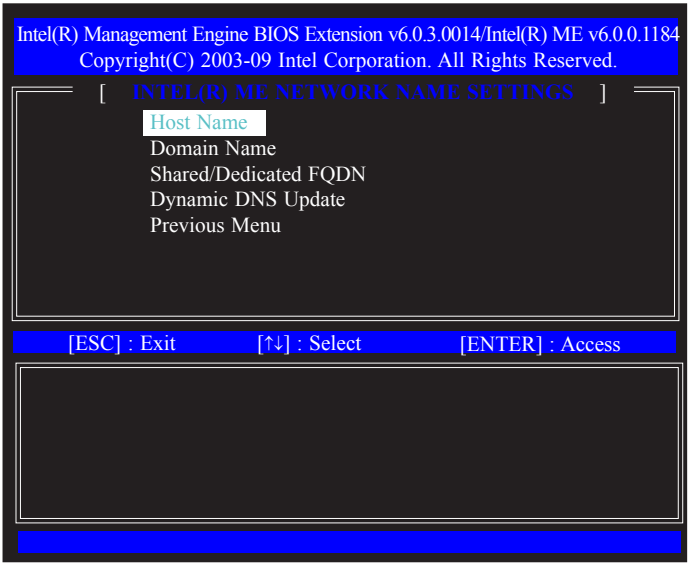
10. Select **Network Setup** then press Enter.



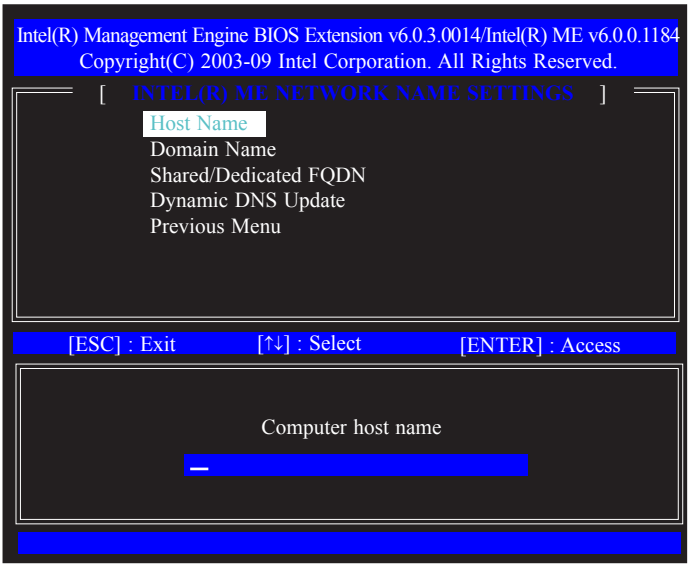
11. In the **Intel(R) Network Setup** menu, select **Intel(R) ME Network Name Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) NETWORK SETUP]
Intel(R) ME Network Name Settings
TCP/IP Settings
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

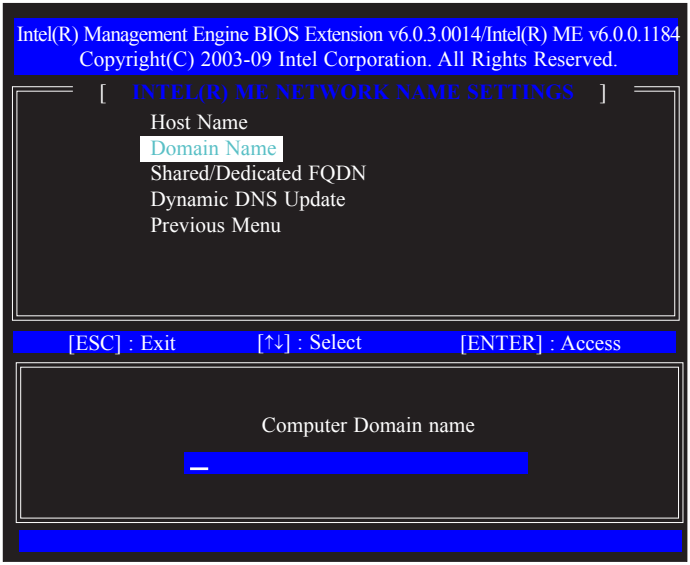
12. In the **Intel(R) ME Network Name Settings** menu, select **Host Name** then press Enter.



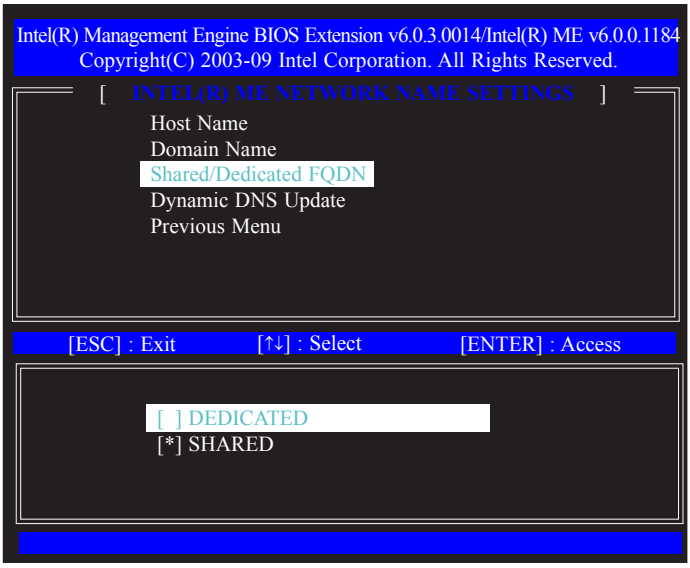
13. Enter the computer's host name then press Enter.



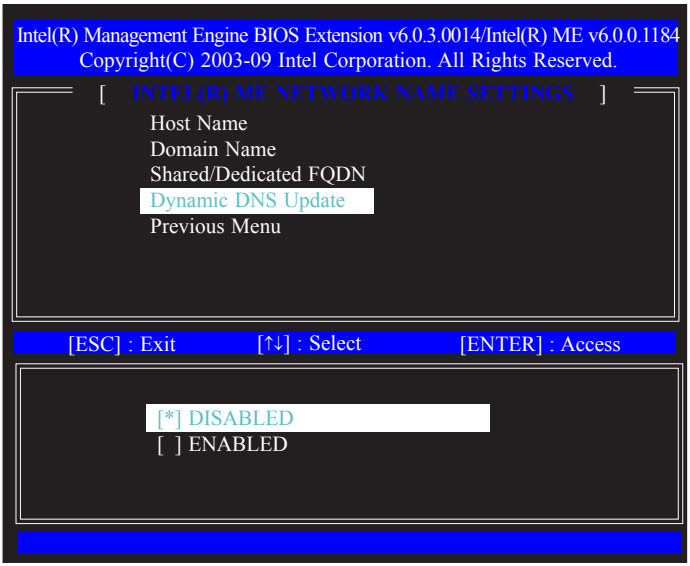
14. Select **Domain Name** then press Enter. Enter the domain name then press Enter.



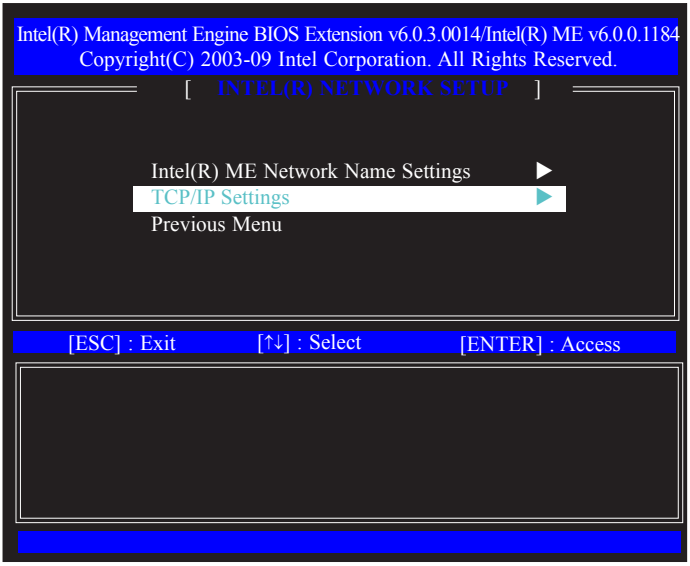
15. Select **Shared/Dedicated FQDN** then press Enter. Select Shared or Dedicated then press Enter.



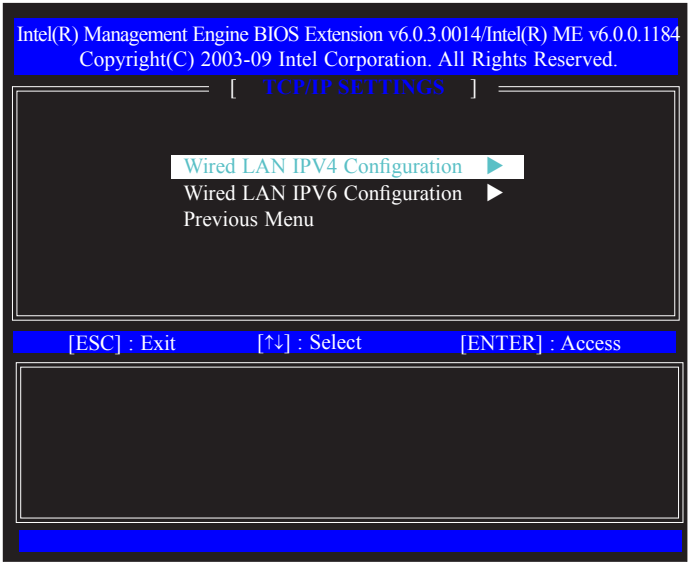
16. Select **Dynamic DNS Update** then press Enter. Select Enabled or Disabled then press Enter.



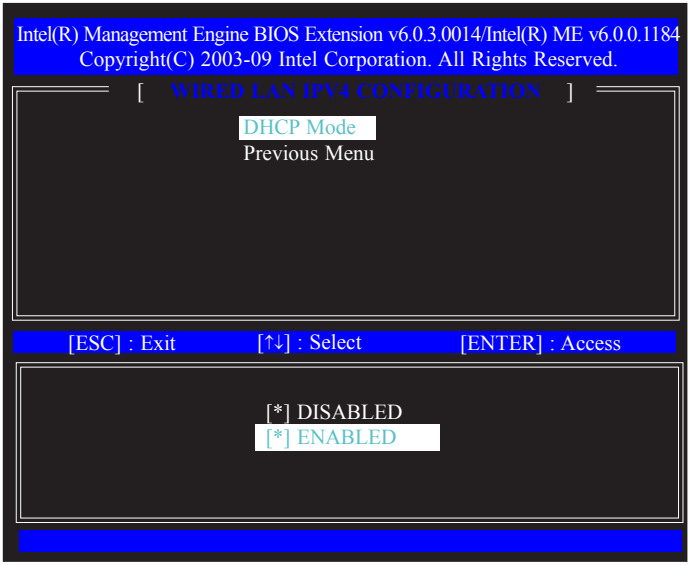
17. Select Previous Menu until you return to the **Network Setup** menu. Select **TCP/IP Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[INTEL(R) NETWORK SETUP]
Intel(R) ME Network Name Settings
TCP/IP Settings
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

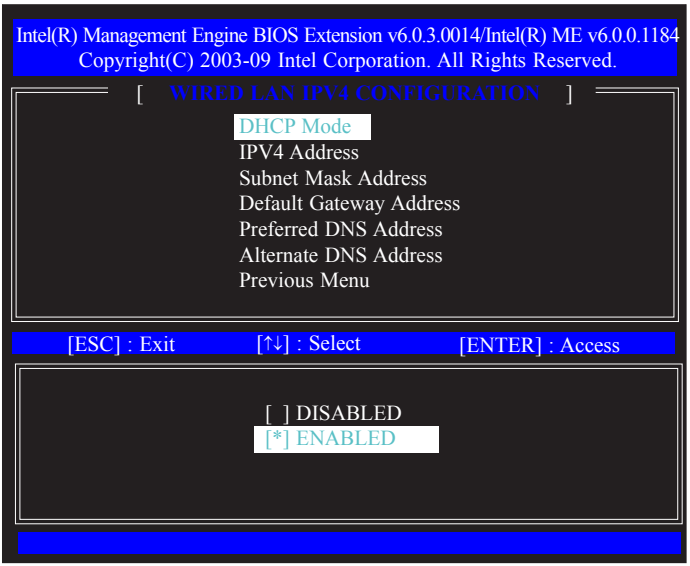
18. In the **TCP/IP Settings** menu, select **Wired LAN IPV4 Configuration** then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[TCP/IP SETTINGS]
Wired LAN IPV4 Configuration
Wired LAN IPV6 Configuration
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

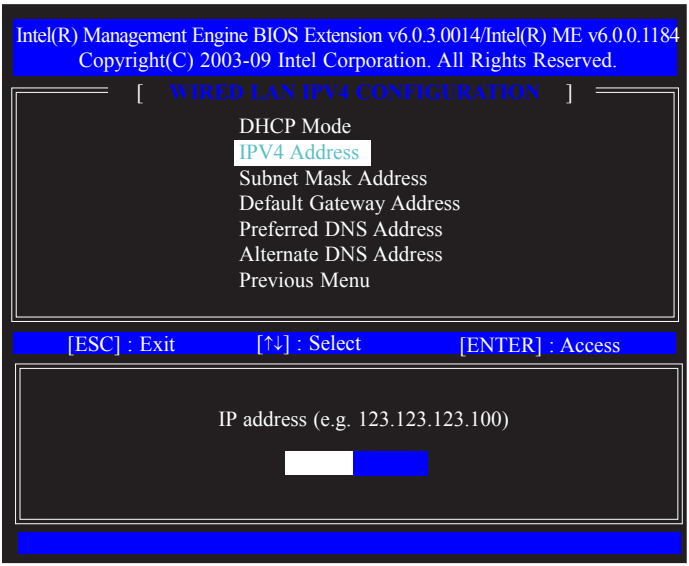
19. In the **Wired LAN IPV4 Configuration** menu, select **DHCP Mode** then press Enter. Select Enabled then press Enter.



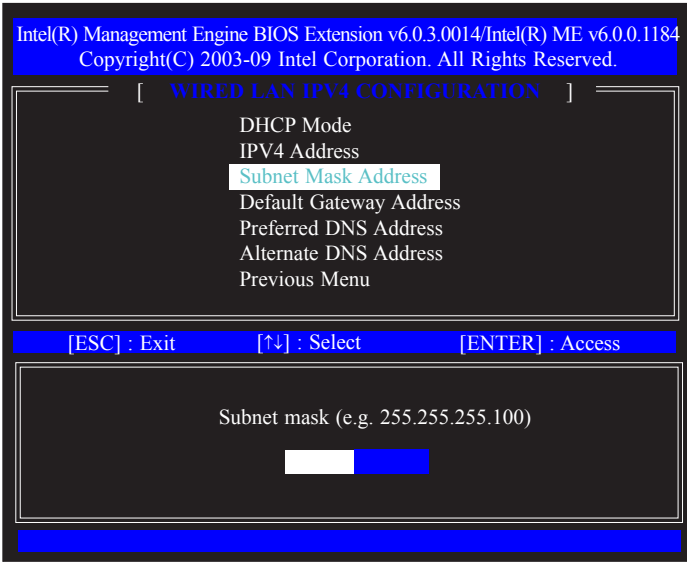
20. A list of options in the **Wired LAN IPV4 Configuration** menu will appear.



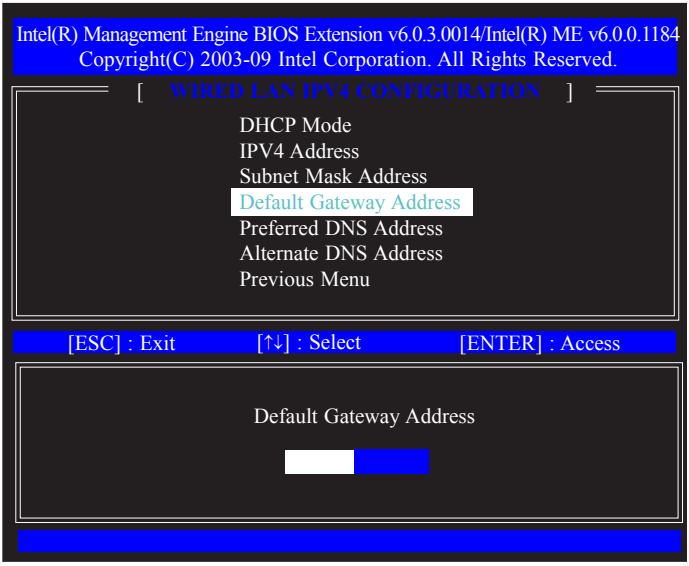
21. Select **IPV4 Address** then press Enter. Enter an IP Address then press Enter.



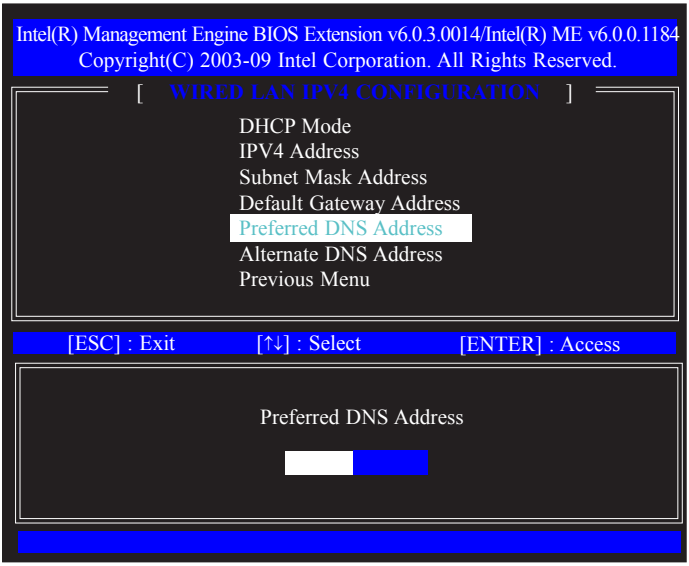
22. Select **Subnet Mask Address** then press Enter. Enter the subnet mask address then press Enter.



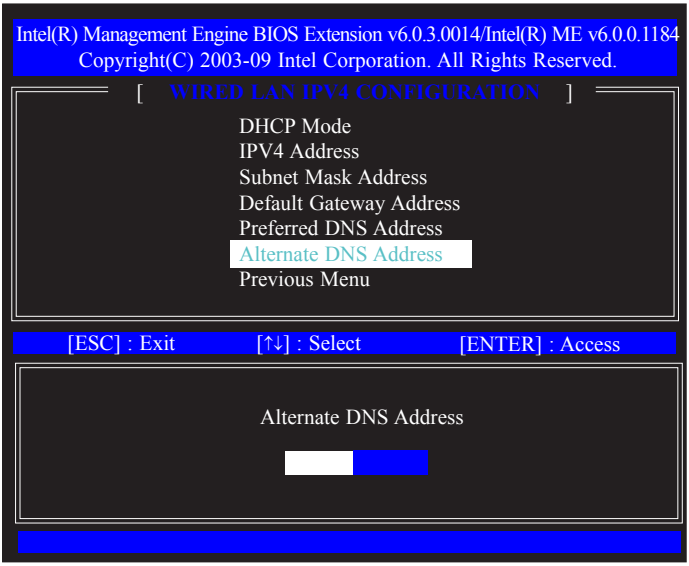
23. Select **Default Gateway Address** then press Enter. Enter the default gateway address then press Enter.



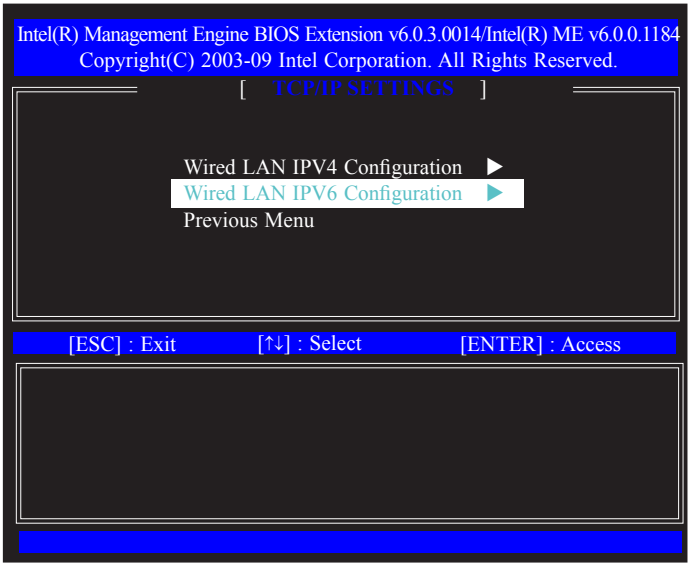
24. Select **Preferred DNS Address** then press Enter. Enter the preferred DNS address then press Enter.



25. Select **Alternate DNS Address** then press Enter. Enter the alternate DNS address then press Enter.



26. Select Previous Menu until you return to the **TCP/IP Settings** menu. Select **Wired LAN IPV6 Configuration** then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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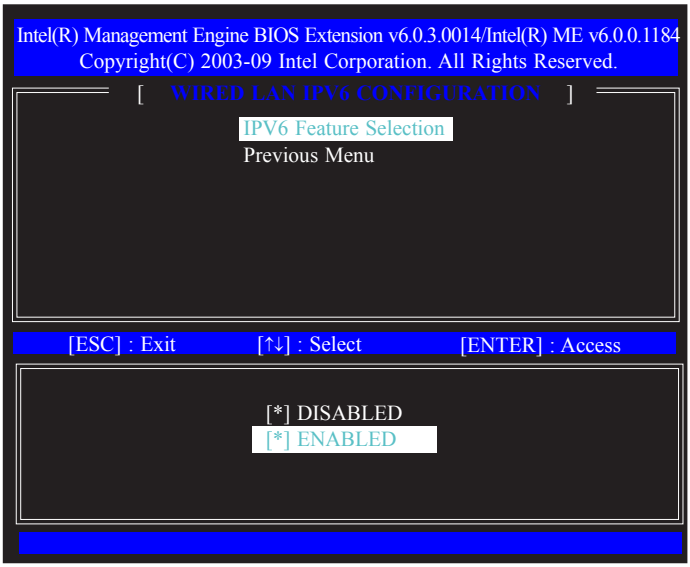
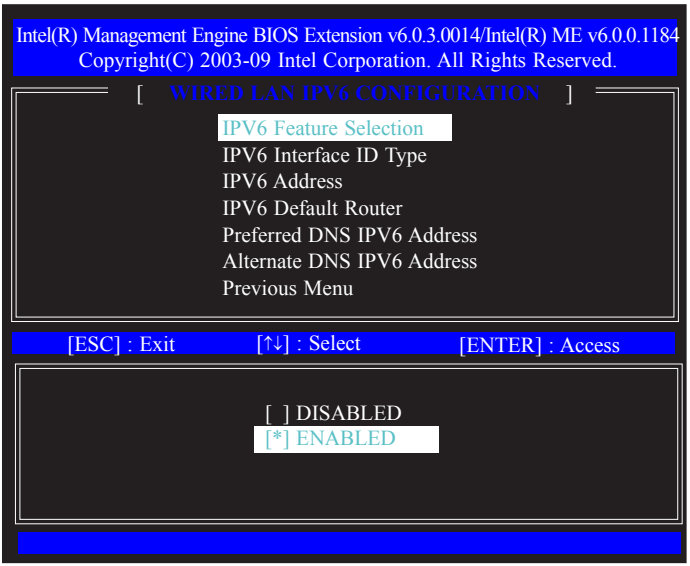
[TCP/IP SETTINGS]
Wired LAN IPV4 Configuration
Wired LAN IPV6 Configuration
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

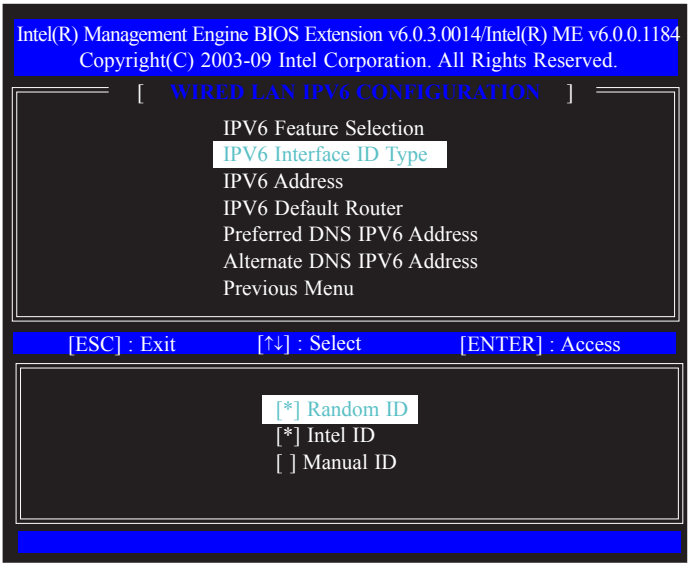
27. In the **Wired LAN IPV6 Configuration** menu, select **IPV6 Feature Selection** then press Enter. Select Enabled then press Enter.



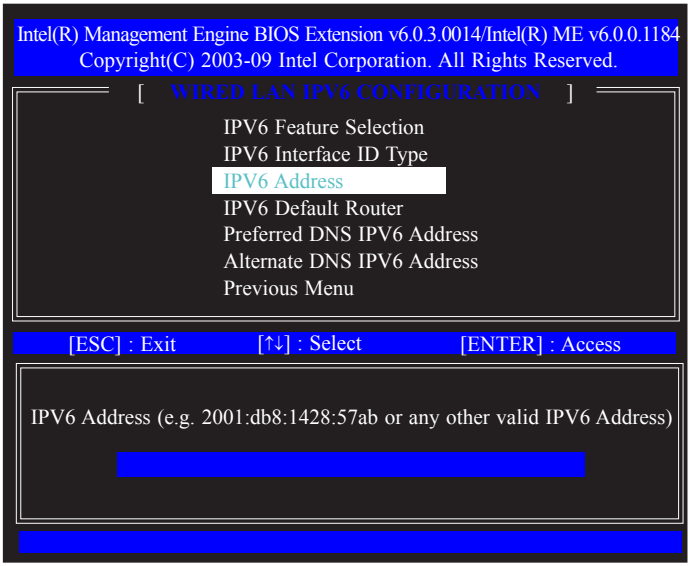
28. A list of options in the **Wired LAN IPV6 Configuration** menu will appear.



29. Select **IPV6 Interface ID Type** then press Enter. Select the ID type then press Enter.



30. Select **IPV6 Address** then press Enter. Enter the IPV6 address then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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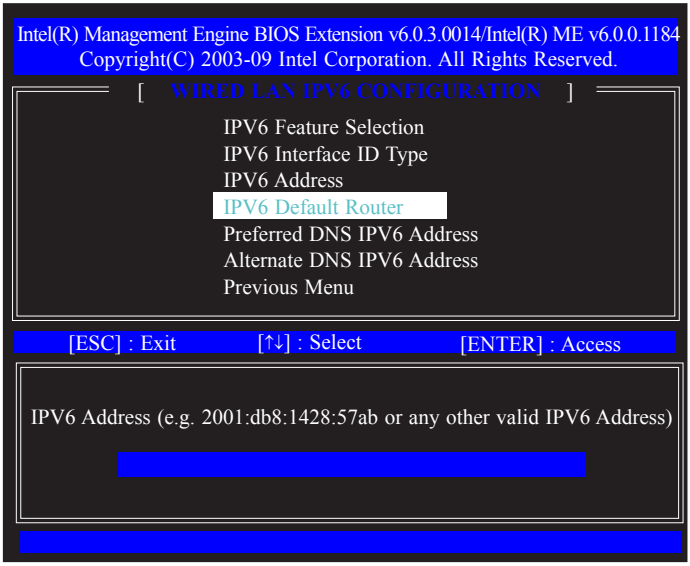
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access
IPV6 Address (e.g. 2001:db8:1428:57ab or any other valid IPV6 Address)

31. Select **IPV6 Default Router** then press Enter. Enter the IPV6 default router address then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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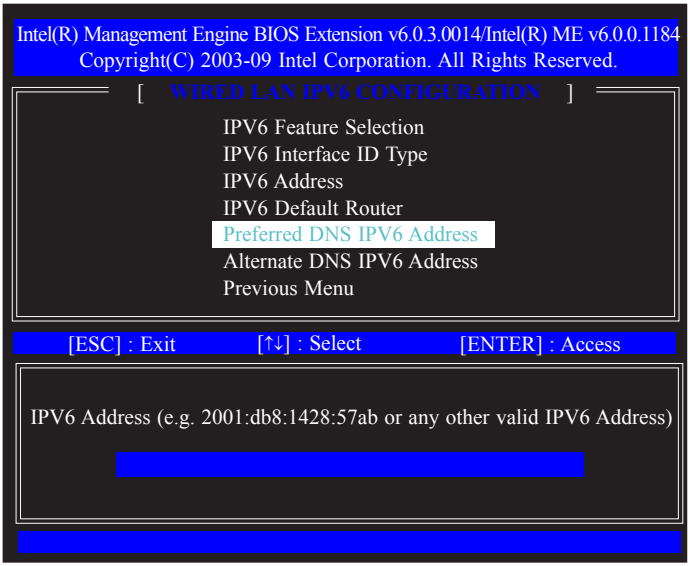
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access
IPV6 Address (e.g. 2001:db8:1428:57ab or any other valid IPV6 Address)

32. Select **Preferred DNS IPV6 Address** then press Enter. Enter the preferred DNS IPV6 address then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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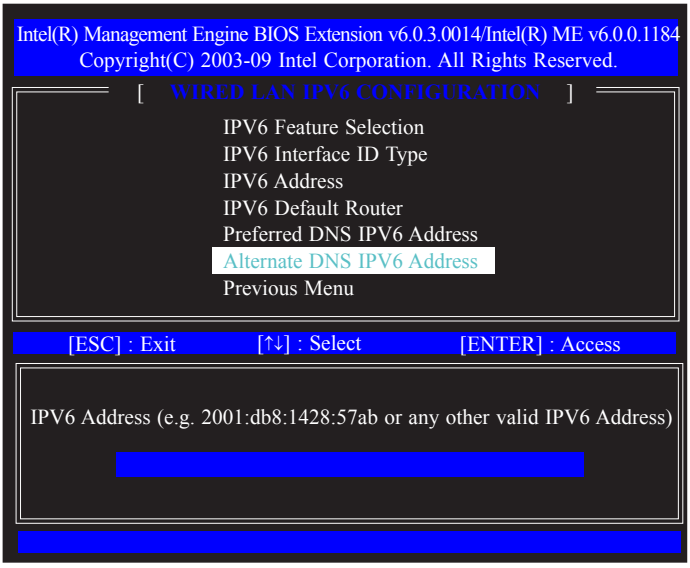
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access
IPV6 Address (e.g. 2001:db8:1428:57ab or any other valid IPV6 Address)

33. Select **Alternate DNS IPV6 Address** then press Enter. Enter the alternate DNS IPV6 address then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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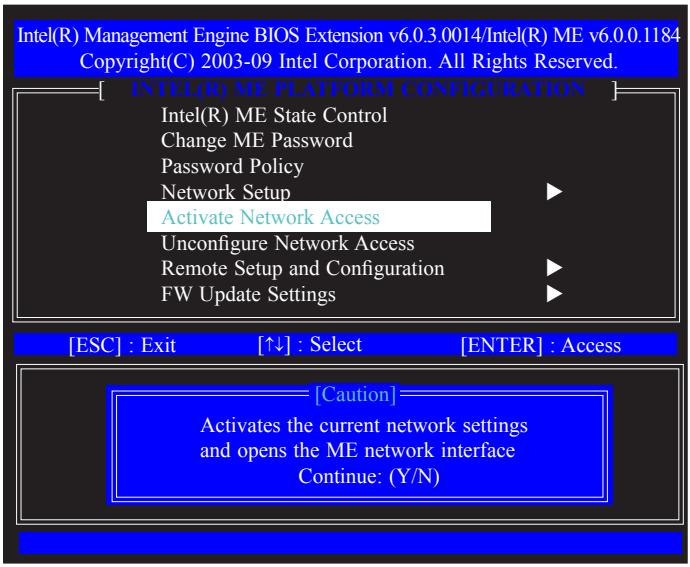
[WIRED LAN IPV6 CONFIGURATION]
IPV6 Feature Selection
IPV6 Interface ID Type
IPV6 Address
IPV6 Default Router
Preferred DNS IPV6 Address
Alternate DNS IPV6 Address
Previous Menu
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access
IPV6 Address (e.g. 2001:db8:1428:57ab or any other valid IPV6 Address)

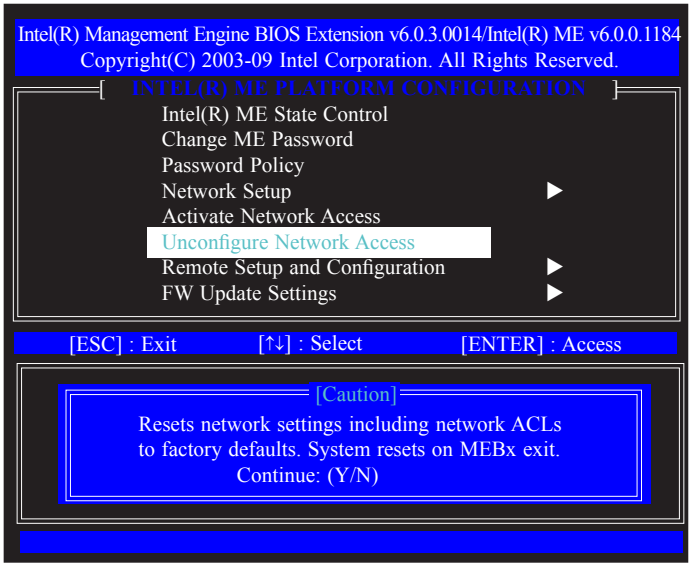
34. Select Previous Menu until you return to the **Intel(R) ME Platform Configuration** menu.

    Select **Activate Network Access** then press Enter.

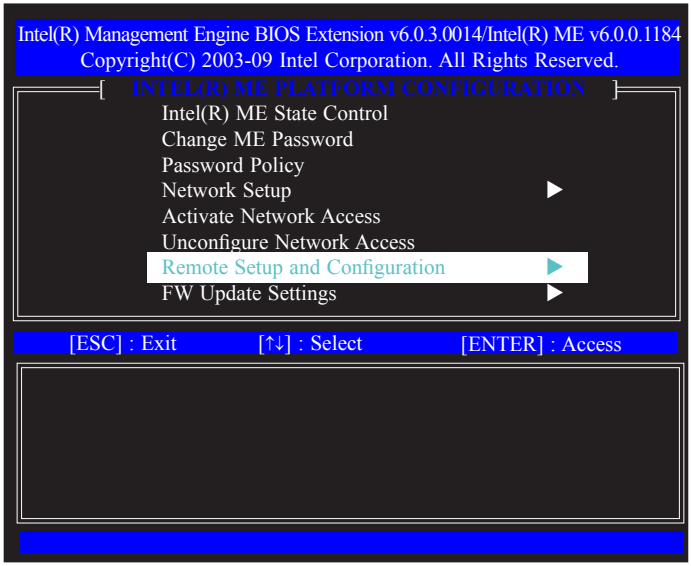
    Type **Y** then press Enter.



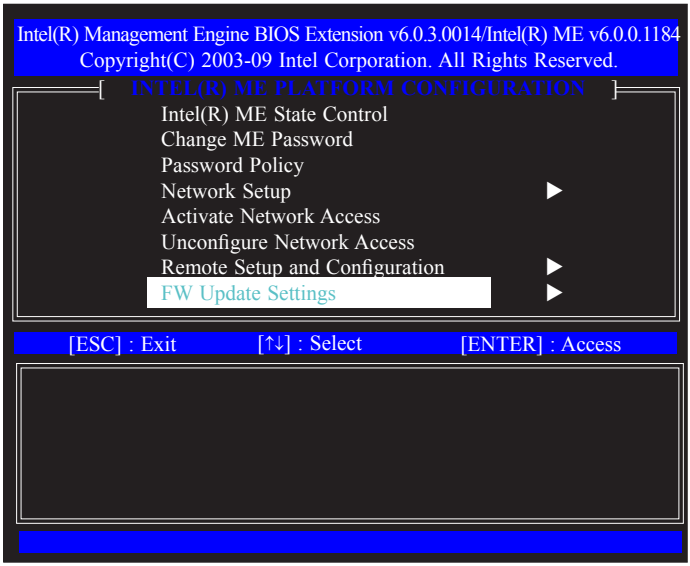
35. In the **Intel(R) ME Platform Configuration** menu, select **Unconfigure Network Access** then press Enter. Type **Y** then press Enter.



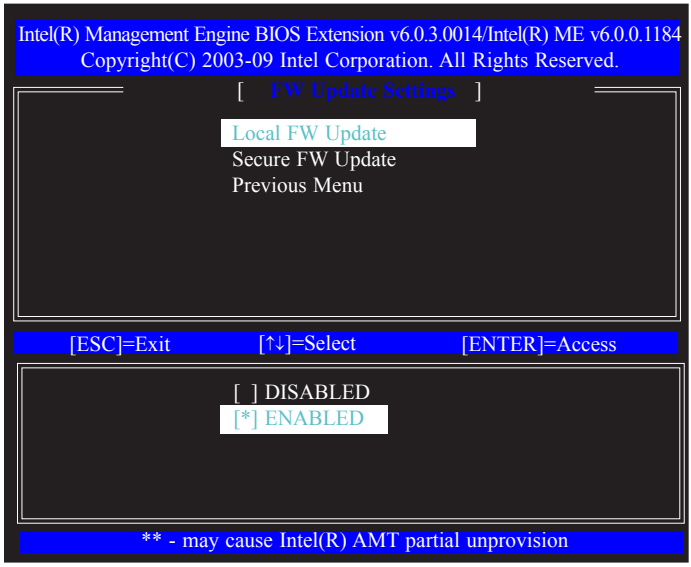
36. In the **Intel(R) ME Platform Configuration** menu, select **Remote Setup and Configuration** then press Enter.



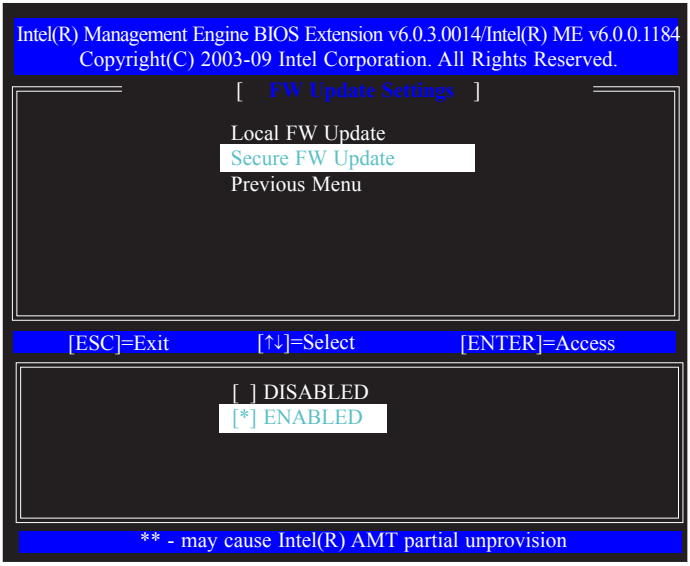
37. Select Previous Menu until you return to the **Intel(R) ME Platform Configuration** menu. Select **FW Update Settings** then press Enter.



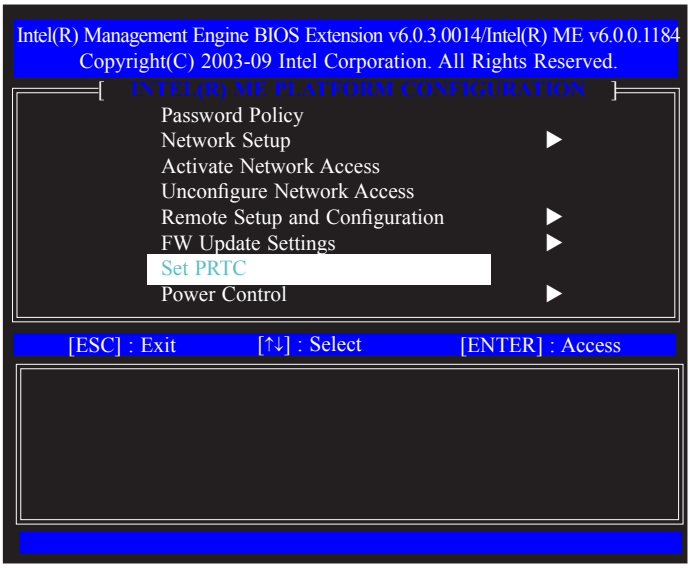
38. In the **FW Update Settings** menu**,** select **Local FW Update** then press Enter. Select **Enabled** then press Enter.



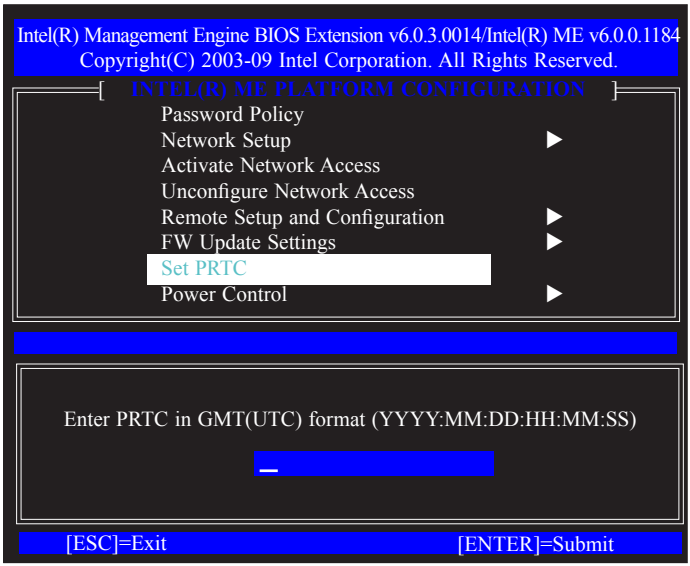
39. In the **FW Update Settings** menu**,** select **Secure FW Update** then press Enter. Select **Enabled** then press Enter.



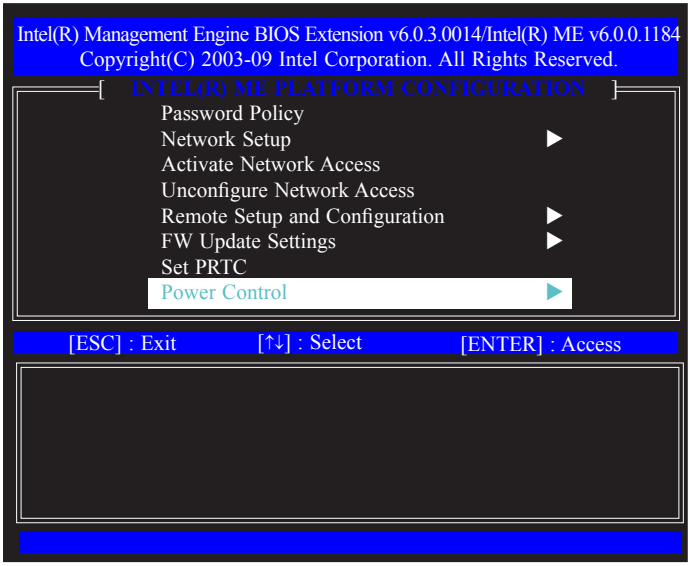
40. Select Previous Menu until you return to the **Intel(R) ME Platform Configuration** menu. Select **Set PRTC** then press Enter.



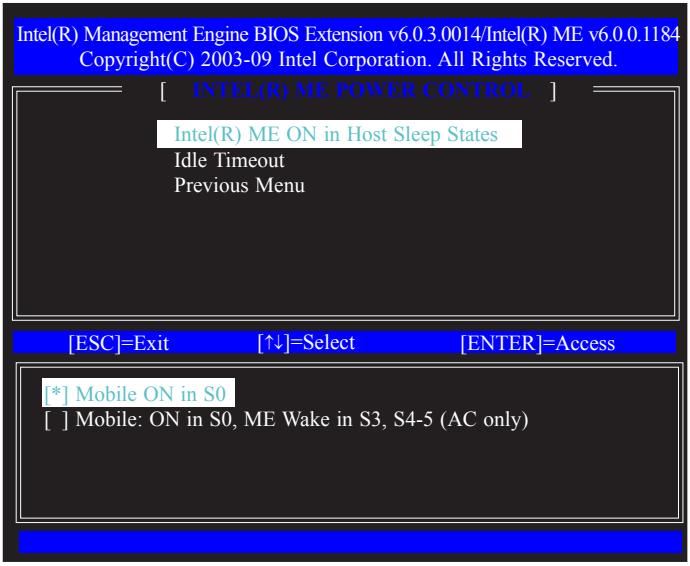
41. Enter the PRTC in GMT(UTC) format.



42. In the **Intel(R) ME Platform Configuration** menu, select **Power Control** then press Enter.



43. In the **Intel(R) ME Power Control** menu**,** select **Intel(R) ME ON in Host Sleep States** then press Enter. Select an option then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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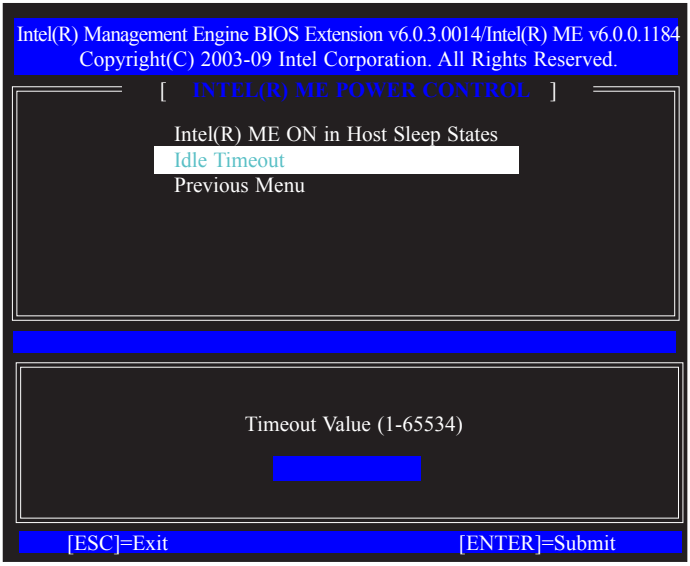
[INTEL(R) ME POWER CONTROL]
Intel(R) ME ON in Host Sleep States
Idle Timeout
Previous Menu
[ESC]=Exit
[↑↓]=Select
[ENTER]=Access
[*] Mobile ON in S0
[ ] Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)

44. In the **Intel(R) ME Power Control** menu**,** select **Idle Timeout** then press Enter. Enter the timeout value.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
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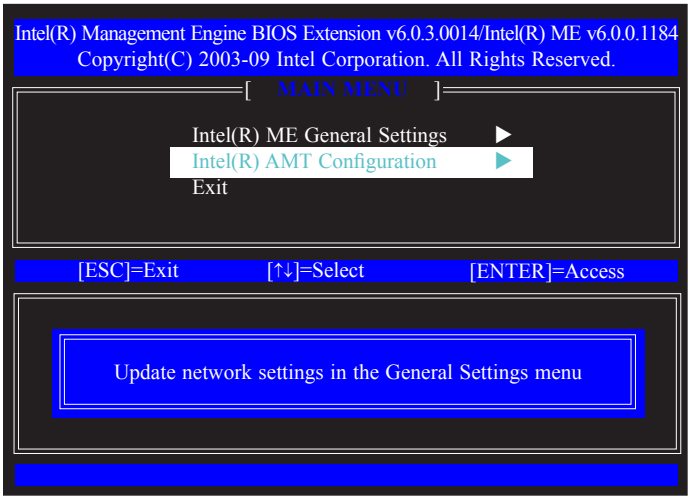
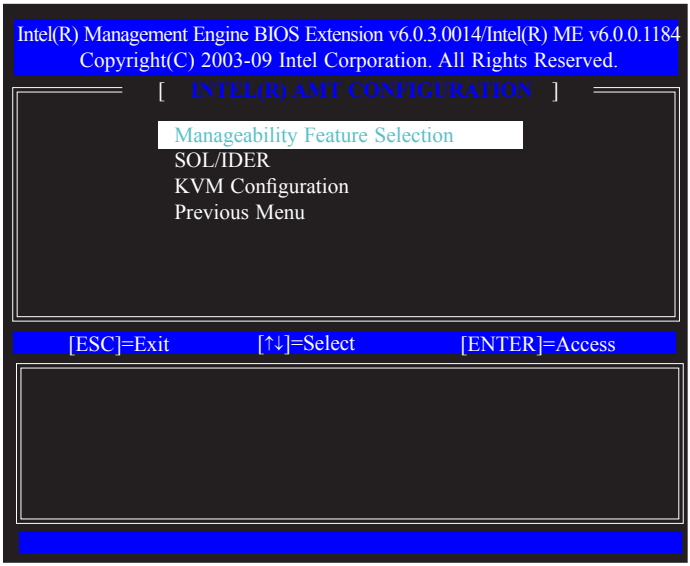
[INTEL(R) ME POWER CONTROL]
Intel(R) ME ON in Host Sleep States
Idle Timeout
Previous Menu
Timeout Value (1-65534)
[ESC]=Exit
[ENTER]=Submit

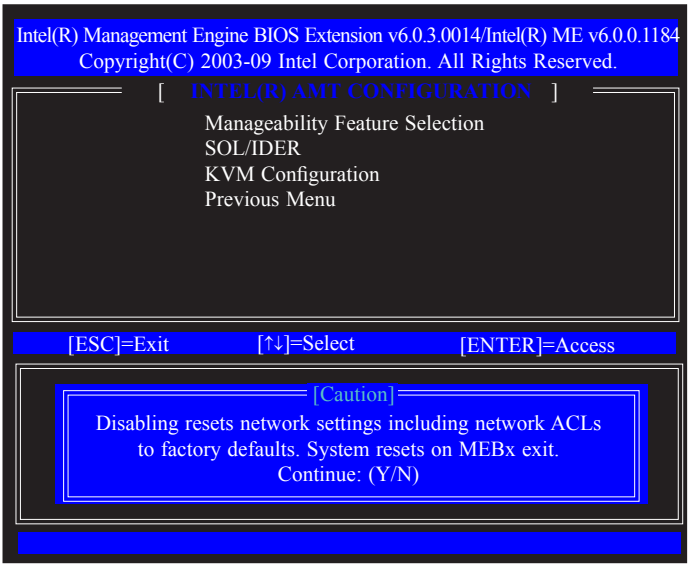
45. Select Previous Menu until you return to the **Main Menu**. Select **Intel(R) AMT Configuration**.



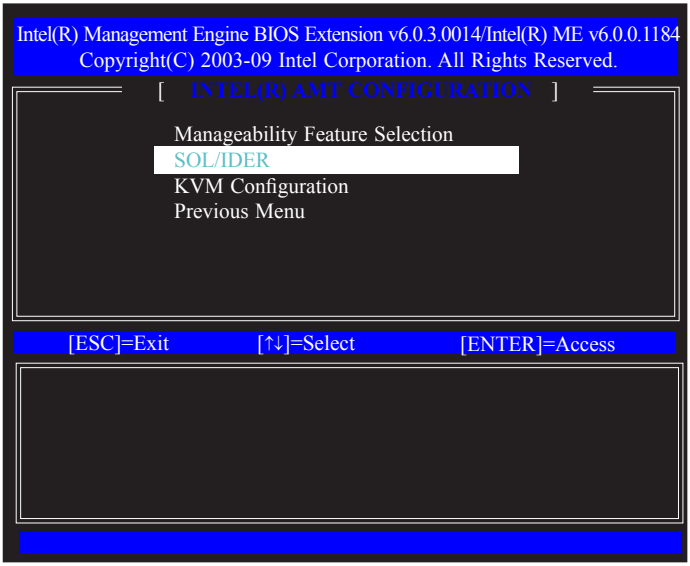
46. In the **Intel(R) AMT Configuration** menu**,** select **Manageability Feature Selection** then press Enter.



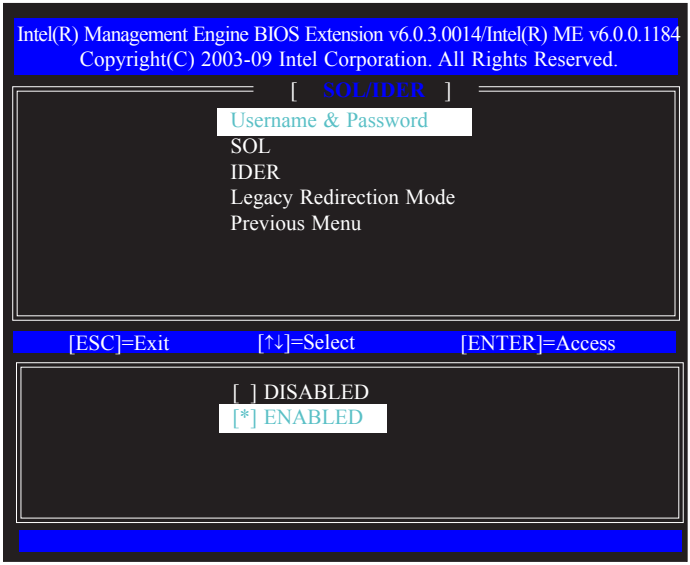
47. Type **Y** then press Enter.



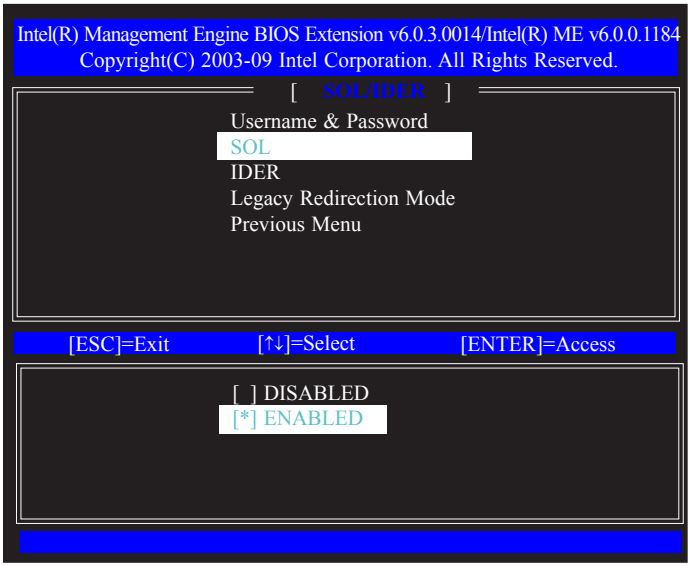
48. In the **Intel(R) AMT Configuration** menu**,** select **SOL/IDER** then press Enter.



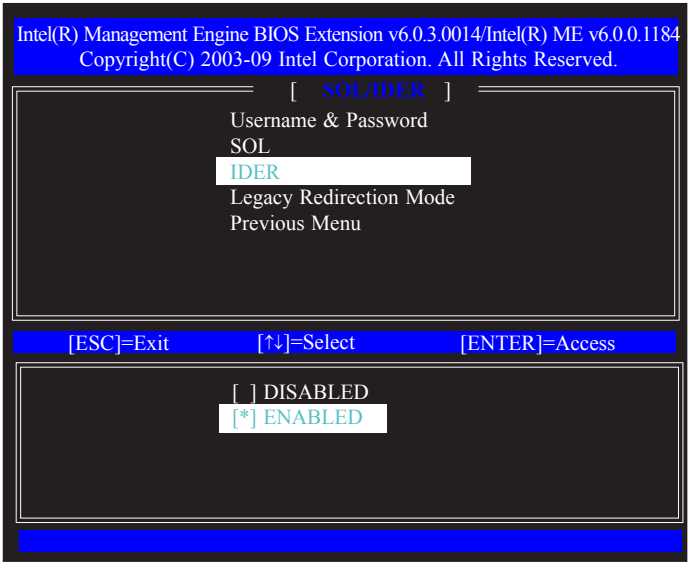
49. In the **SOL/IDER** menu, select **Username & Password** then press Enter. Select Enabled then press Enter.



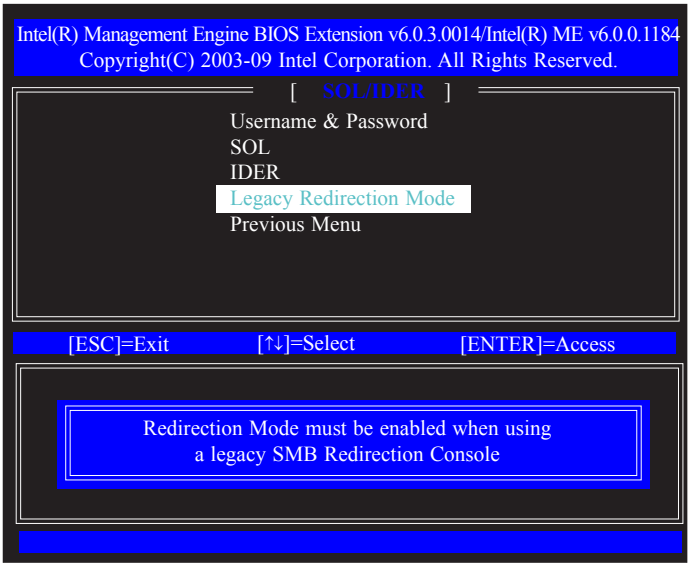
50. In the **SOL/IDER** menu, select **SOL** then press Enter. Select Enabled then press Enter.



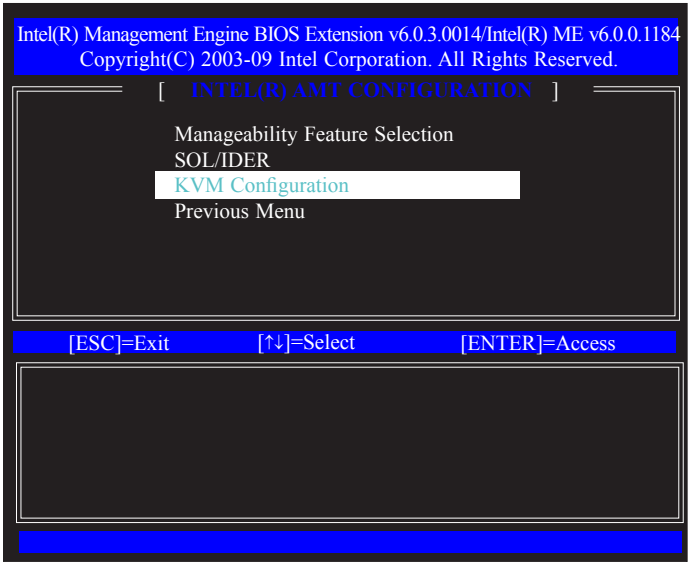
51. In the **SOL/IDER** menu, select **IDER** then press Enter. Select Enabled then press Enter.



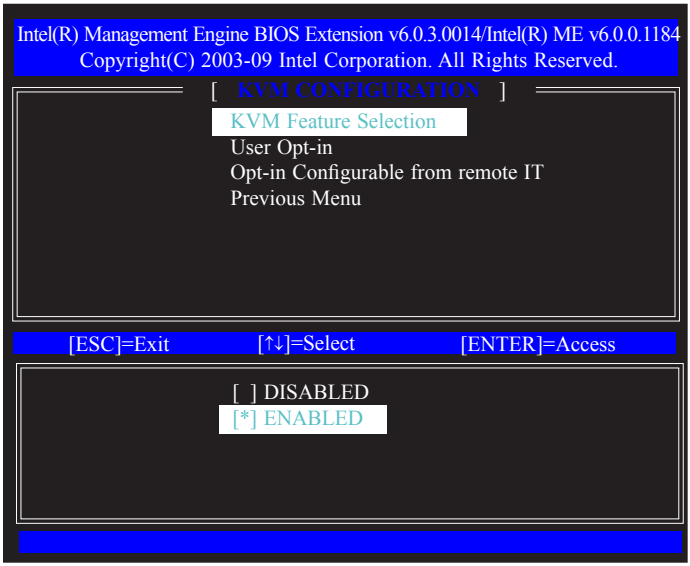
52. In the **SOL/IDER** menu, select **Legacy Redirection Mode** then press Enter.



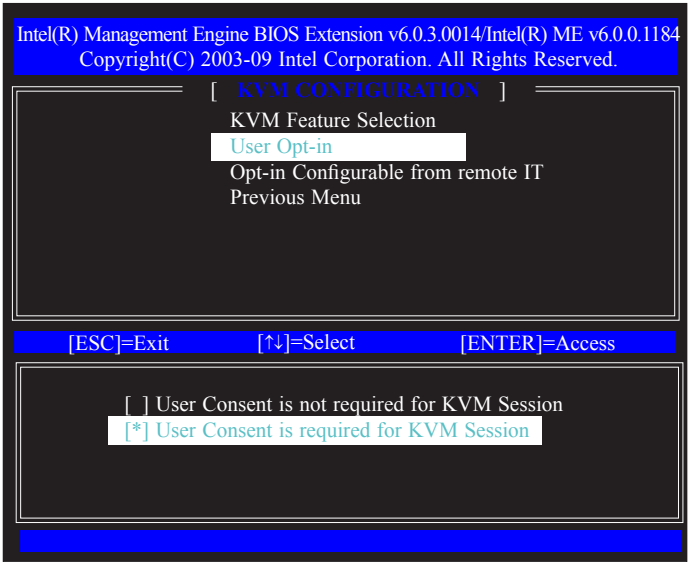
53. Select Previous Menu until you return to the **Intel(R) AMT Configuration** menu**.** Select **KVM Configuration** then press Enter.



54. In the **KVM Configuration** menu**,** select **KVM Feature Selection** then press Enter. Select Enabled then press Enter.



55. In the **KVM Configuration** menu, select **User Opt-in** then press Enter. Select **User Consent is required for KVM Session** then press Enter.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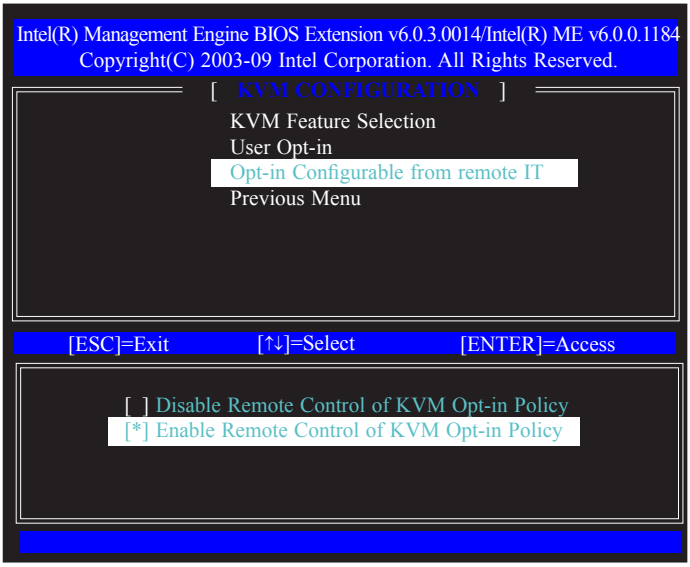
[KVM CONFIGURATION]
KVM Feature Selection
User Opt-in
Opt-in Configurable from remote IT
Previous Menu
[ESC]=Exit [↑↓]=Select [ENTER]=Access
[ ] User Consent is not required for KVM Session
[*] User Consent is required for KVM Session

56. In the **KVM Configuration** menu, select **Opt-in Configurable from Remote IT** then press Enter. Select **Enable Remote Control of KVM Opt-in Policy** then press Enter.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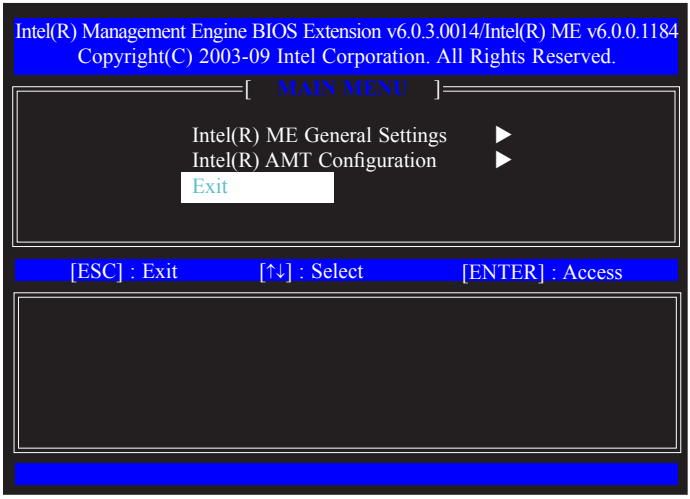
[KVM CONFIGURATION]
KVM Feature Selection
User Opt-in
Opt-in Configurable from remote IT
Previous Menu
[ESC]=Exit [↑↓]=Select [ENTER]=Access
[ ] Disable Remote Control of KVM Opt-in Policy
[*] Enable Remote Control of KVM Opt-in Policy

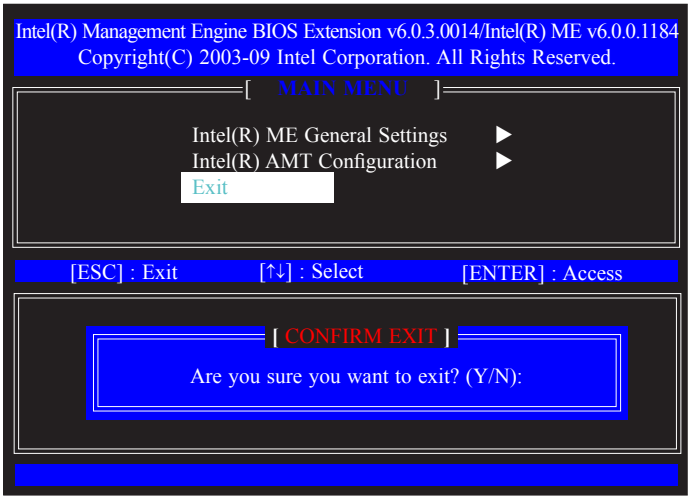
57. Select Previous Menu until you return to the **Main Menu.** Select Exit then press Enter.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings
Intel(R) AMT Configuration
Exit
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access

58. The following message will be displayed on the screen.

[CONFIRM EXIT]
Are you sure you want to exit? (Y/N):

Press **Y**.


Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184
Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[MAIN MENU]
Intel(R) ME General Settings
Intel(R) AMT Configuration
Exit
[ESC] : Exit
[↑↓] : Select
[ENTER] : Access
[CONFIRM EXIT]
Are you sure you want to exit? (Y/N):

Appendix A - Watchdog Sample Code

```
;Software programming example:

;----------------------------------------------
;(1) Enter Super IO Configuration mode
;----------------------------------------------
MOV         DX,2EH
MOV         AL,87H
OUT         DX,AL
OUT         DX,AL

;--------------------------------------------------------------------------------------------
;(2) Configuration Logical Device 7, register CRF5/CRF6 (WDT Control /WDT
timer)
;--------------------------------------------------------------------------------------------
MOV         DX,2EH
MOV         AL,07H              ;Ready to Program Logical Device
OUT         DX,AL

MOV         DX,2FH
MOV         AL,07H              ;Select Logical Device 7
OUT         DX,AL

MOV         DX,2EH
MOV         AL, F6H             ;Select watchdog timer register
OUT         DX,AL

MOV         DX,2FH
MOV         AL,10H              ;Set watchdog timer value
OUT         DX,AL

MOV         DX,2EH
MOV         AL, F5H             ;Select watchdog Control Register
OUT         DX,AL

MOV         DX,2FH
MOV         AL,61H              ;Set Watchdog Control Value
OUT         DX,AL

;-----------------------------------------------------------------
;(1) Exit extended function mode
;-----------------------------------------------------------------
MOV          DX,2EH
MOV          AL,AAH
OUT           DX,AL
```

Appendix B - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Important
Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy type mismatch.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

System Error Message

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

The BIOS reports memory test fail if the memory has error(s).

Appendix C - Troubleshooting

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.

2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.

3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.

2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.

3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.

2. The diskette may be write-protected. Use a diskette that is not write-protected.

3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.

4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.

2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.

2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.

4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.

2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.

2. Check the jumper settings to ensure that the jumpers are properly set.

3. Verify that all memory modules are seated securely into the memory sockets.

4. Make sure the memory modules are in the correct locations.

5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.

6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.